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CONTENTS

	PAGE
Editorials	49
Letters to the Editor	52
Publications Received	53
The Scrap Heap	53
Overseas Railway Affairs	54
Transition Curves	55
Features of the New 4-8-4 Victorian Locomotive	56
New Traversing Head Slotting Machine	59
Railway News Section	63
Personal	63
Transport Services and the War	66
Stock Market and Table	72

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DISPATCH OF THE "RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The Railway Gazette *possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules & Orders No. 1190 *of* 1940, *and No.* 359 *of* 1941

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:—

Mondays to Fridays - 9.30 *a.m. till* 5.0 *p.m.*

The office is closed on Saturdays

Indian Railways and Population Growth

THANKS to efficient preventive measures against famine, plague, and infant and other mortality, the 1941 census shows that the population of India has increased during the past 10 years by 62,000,000 from 338,000,000 to 400,000,000, or by more than half as much again as the whole population of England and Wales. This increase of between $\frac{1}{5}$ and $\frac{1}{6}$ in a single decade in a sub-continent dependent almost entirely upon agriculture is a most serious matter, as a corresponding expansion in food production is problematical. Under war conditions, when the country has to rely almost entirely upon its own resources, the difficulty of providing for such a phenomenal growth of population is greatly enhanced, and the raising of the standard of living, for which the millions are crying out, is in present circumstances almost impossible. India is, however, fortunate in that its railways—which have always been a vital factor in reducing famine to a minimum—are also one of the greatest public benefactors in providing some of the cheapest transport in the world, both goods and passenger. Even now they are contriving to maintain a moderate scale of tariffs and efficient services, though hampered by heavy military traffic, depleted staffs, and workshops wholly or partly devoted to munitions production. They are, in fact, meeting the heavy calls upon them, both civil and military, with conspicuous success, no mean feat as a war effort.

* * * *

Taxation and War Production

The Engineering Industries Association, which was formed last year to provide facilities for mutual action in matters affecting the engineering industry in its many branches, has submitted to the Government a memorandum in which it expresses deep concern at the lagging of war production in the engineering industries and at the burdens imposed on industry by "ill-conceived financial legislation," particularly the 1941 Finance Bill. It points out that expenditure on premises, plant, and equipment is essential and that financial legislation has made it impossible for many engineering firms to buy plant and equipment—the normal machinery of finance has been disturbed and no adequate substitute has been provided. New capital cannot be obtained since the Excess Profits Tax has hit hardest at those industries which have had to expand for war production; loans cannot be obtained since the expenditure needed has little post-war value. Businesses are being forced to avoid all expenditure which would increase their output and the efficiency of working, and have resorted to uneconomic expenditure which cannot be charged to revenue. The Government finance which is available is not deemed of much help since the average time taken for a decision varies from four to nine months. These factors, it is declared, bear heavily on small and intermediate-sized businesses which provide the bulk of the engineering capacity of the country. War taxation has not recognised the service they perform and in many cases, because they have attempted to make the best of it, they are being compelled to risk financial suicide.

* * * *

Widening Scope of Engineering

In the past the economics of engineering projects, the organisation and management of engineering work, and the relations of æsthetic considerations to engineering design and construction have not generally been included in the syllabus of courses of engineering. The Institution of Civil Engineers has recently approached the Vice-Chancellor of Cambridge University with an offer to finance for a period of five years a lectureship on these subjects in the hope that they would in due course form part of the engineering curriculum of the Mechanical Sciences Tripos. The Council of the Senate of the university has accepted the proposal in principle, but its full adoption will necessitate some reconsideration of the scheme of instruction in the Engineering School, which it would be impracticable to undertake in wartime. Nevertheless, a beginning is to be made in the next academical year beginning in the autumn by inviting a number of eminent engineers and others to visit the university to give either

single lectures or short courses on subjects coming within the terms of the proposal. At least two of the three subjects mentioned include many aspects of engineering work which should be kept continuously under review in the light of the incidence of scientific research on the use of materials and on design. At the present time the organisation and management of engineering work is a subject of immediate and great importance, but æsthetic considerations have as a rule to be left to the future when they will assume an importance greater than hitherto. As to the economics of engineering projects, the importance of this subject depends largely on the interpretation of the word "economics." In the light of its derivative meaning—the management of concerns and resources for the most efficient use of materials, equipment, and labour available—its importance is almost vital at the present time. After the war it will depend largely upon the amount of destruction which has taken place. If the industrial capacity of the belligerent nations is not seriously damaged, there will be such an abundance of real resources that frugality in their use will not matter much.

* * * *

Bombay, Baroda & Central India Railway Company

Abbreviated accounts for the year to March 31, 1941, show that the length of railways worked by the company is 3,509 miles, the same as at the end of the previous year. Comparative results in thousands of rupees are :—

	1939-40	1940-41
Earnings	12,24,97	14,08,73
Expenditure	6,33,52	6,58,75
Net earnings	5,91,45	7,49,98

Thus, while earnings in the year under review increased by Rs. 1,83,76,000, the advance in expenditure was only Rs. 25,23,000, bringing the operating ratio down from 51·72 per cent. to 46·76 per cent., and giving an improvement of Rs. 1,58,53,000 in net earnings. From the stockholders' share of surplus earnings, after deducting the interim payment of Rs. 2,00,000, Indian income and super taxes, and providing for excess profits tax and incidental expenses, a remittance of Rs. 8,10,000 producing £60,539 was received in June, 1941. The total return to stockholders for the year is 6 per cent., the same as for the last twenty years. As already announced, the directors have received notice of the termination on December 31, 1941, of their contracts with the Secretary of State. It will be remembered that the original contract with the Secretary of State, on a 5 per cent. guarantee basis, was terminated on December 31, 1905, with the purchase of the company's undertaking for £154 15s. 5d. for each £100 old consolidated stock. A new contract for working the line was entered into in 1907, with a 3 per cent. guarantee on £2,000,000 of the company's capital.

* * * *

Railway Conditions in Mexico

The possibility of some improvement in the position of Mexican railways generally was mentioned by Mr. Vincent W. Yorke in his recent statement to the shareholders of the Mexican Railway Co. Ltd., which showed an operating loss of £66,000 for the half-year ended December 31 last. After alluding to the present precarious state of his company and that of the whole railway system of Mexico, Mr. Yorke added that there were some welcome signs of a serious effort on the part of the Government to introduce reforms into the working of the National Railways. This system of more than 10,000 miles was handed over to a syndicate of workmen some three years ago, since when it has fallen into a state of financial bankruptcy and physical dilapidation. Early this year the Government, which owns the majority of the share capital of the undertaking, published a Decree under which it takes power to control the board and to nominate the chairman and managing director. General Estrada, the Government nominee, appears to be tackling a desperate situation with promptness and vigour. On March 7 he put it plainly to his workmen that, although he was willing to advise the Government to make substantial advances for the rehabilitation of the property, the business in the future would have to be made self-supporting, and firm steps must be taken to adjust the men's duties and wages. Mr. Yorke believes that thorough reforms on the National Railways must be reflected in due course in the business of his own company.

* * * *

A Warning to Schoolmasters and Others

A summary of Colonel A. C. Trench's report on the fire which broke out in a London—Newcastle express on April 28, 1941, some eight miles north of Grantham, and by which six boys lost their lives, appears at page 71. The boys were flicking lighted matches about, one of which started a fire in an inaccessible place. Fanned by strong draughts, this rapidly spread beyond control, and quickly involved the two adjacent vehicles which were also burnt out. The guard did everything in his power to assure himself that all the boys were out of the blazing vehicle, which was one of the company's standard bucket-seat open thirds, with a wooden body mounted on a steel underframe. The report makes certain recommendations, directed to minimising the risk of a fire occurring between seat backs in this type of stock, and suggesting a reconsideration of the practice regarding the locking of doors in corridor trains. The inevitable complaint was heard that the pulling of the communication cord did not produce a prompt response, an impression nearly always obtained by people in a state of alarm. The driver had, it is true, momentarily thought of running on to the signal box he was approaching, so as to be near a telephone, but actually stopped as quickly as possible. Colonel Trench, however, points out that to have done so would not have been within the discretion permitted by the rules, which is intended solely to avoid stopping a train in an awkward position, such as on a viaduct or in a tunnel.

* * * *

The Steel Rail and Speed

Derailment of the famous diesel-electric streamliner City of Los Angeles, which, as reported in the February 7 issue of THE RAILWAY GAZETTE, took place near Weir, Colorado, on the night of December 22 last, brings into prominence the increasing susceptibility of the steel rail to fracture in modern high-speed conditions. There was little doubt that a rail fracture was the cause, for a piece of steel 7½ in. long had broken out of the head of a rail, from the running off end, at the point where derailment occurred. The rail in question was found to be perfectly sound, but was a short closure which had been cut to length by the rough-and-ready method of notching with a cold chisel and then breaking with a jim crow. The result was damage to the crystalline structure of the steel, a group of hairline cracks being found to extend inwards from the chisel-marked edges of the fracture. Flame-hardening had been applied to the running surface, to reduce batter at the joint, but despite the 0·79 per cent. carbon and relatively low manganese content of the rail, the hardening was not regarded as having been contributory to failure. The accident is a reminder, however, that with speeds at modern levels too great care cannot be exercised in every matter connected with rail composition and handling, with a view both to prolongation of life and avoidance of casualty. The fact that on one British railway the suspensions of streamline trains and the general reduction of speed appear very considerably to have reduced rail breakage tells much the same tale.

* * * *

Australia's Largest Locomotive

As long ago as 1925 preliminary designs were prepared for large 4-8-2 and 4-8-4 locomotives to work heavy express passenger and freight trains on the Victorian Government Railways, but it was not until the early part of the present year that the first "H" class 4-8-4 was turned into traffic. The intention is to construct three engines of the new class, of which details are given in this issue (page 56), but for the present, owing to the war having delayed the necessary track strengthening work on the Melbourne-Ballarat line, which includes a 1 in 48 grade nearly ten miles long, and on which they are intended to work the Melbourne-Adelaide Overland

Express, only one has been built, and this is now being used in fast freight service between Melbourne and Albury, the Victorian section of the main line to Sydney. In order to develop the power required whilst keeping track stresses to a minimum, three cylinders were adopted. Another factor influencing the design was the necessity of keeping the total wheelbase within the limits of the existing 85 ft. dia. turntables installed at locomotive terminals which at present, or in the future, are likely to handle the class. The design and construction of the new locomotive reflect much credit on the Chief Mechanical Engineer of the Victorian Government Railways, Mr. A. C. Ahlston, and his staff, and upon the ability of the Newport shops to undertake the building of such a large engine in accordance with what must be regarded as a highly advanced specification.

* * * *

Valve Gears for Streamliners

An analysis of eight recent American streamlined passenger engines of the 4-4-2, 4-4-4, and 4-6-4 types shows that three have the Baker valve gear and five the Walschaerts type. All have piston valves of diameter from 0·5 to 0·62 of the cylinder diameter, and valve travels varying from 6½ to 9 in., the majority being from 7 in. to 8 in. Six of the eight designs have coupled wheels of 80 to 84 in. diameter, and the other two have 78 and 79 in. wheels. Boiler pressures vary from 250 to 300 lb. per sq. in. It is, perhaps, to the valve gear characteristics that most interest attaches, for not only do they vary appreciably between the six classes, but few of them seem to be arranged for cut-offs below about 20 per cent., in contradistinction to British types in which cut-offs of 15 per cent. or so are used habitually. In no case does the Walschaerts gear provide a travel greater than 7½ in., whereas the Baker gear in one class gives a travel of 9 in. A determined effort has been made in these long-travel long-lap gears to ameliorate the early release, early compression, and early pre-admission events which automatically follow early cut-offs, but of course the inherent disadvantages of these gears set a strict limit to what can be done. For example, in one design if the cut-off is shortened to 15 per cent., release occurs before mid-stroke, compression begins at 35 per cent. of the stroke, and pre-admission begins at 7½ per cent. before the end of the stroke. The lead provided varies from $\frac{3}{16}$ in. to $\frac{5}{16}$ in., the exhaust clearance from $\frac{1}{8}$ in. to $\frac{1}{4}$ in., the steam lap from 1¼ in. to 1⅞ in., and the maximum cut-off from 73 to 88 per cent.

* * * *

Weight Per Mile Run

One of the measurements that influences locomotive design is that of the weight per foot run of total length, and this, in addition to the more concentrated adhesion weight, has a special interest where track and structures are concerned. It is directly associated with the weight distribution of the engine as a whole and may with tank locomotives be a determining factor in the adoption or rejection of a design. It is, however, subject to constant variation in everyday use and this reaches its climax when the locomotive arrives at the end of the journey, considerably lighter than when it started because of the consumption *en route* of the coal and water supplies. With every mile covered there is, as a matter of course, a reduction in the weight if the computation is based on the well-known formula of " weight in working order." In the case, for instance, of a large express engine hauling a heavy train at a high average speed, starting with 8 tons of coal and 5,000 gal. of water and burning fuel at the rate of 50 lb. a mile, or slightly less, a ton of coal will have been used up at the end of the first 45 miles and so on until a run of say 100 miles is completed, when the tender will be carrying about 2¼ tons of coal less than when it started. In the same time, and still using round figures, some 3,800 gal. of water, weighing approximately 17 tons, will have been transferred from the tender to the boiler and there converted into steam. Unless the water supply is replenished at a station crane or picked up from water troughs, the locomotive will weigh upwards of 19 tons less than it did at the beginning of the journey.

Mr. C. Peter Sandberg

THE death of Mr. C. Peter Sandberg, whose career is reviewed on p. 63, has removed from the world of engineering a man of brilliant attainments and widespread influence. Although his name is associated chiefly with the development and improvement of the steel rail, the scope of his interests and the tenacity with which he pursued his aims are perhaps best seen by the way in which, notwithstanding the strongest opposition of expert opinion, he convinced himself that it was possible to salve the bullion from the *Egypt*, which had sunk in 400 ft. of water as the result of a collision off Ushant in 1922. After first confounding the experts by locating the wreck, with the help of a Swedish firm, Mr. Sandberg pursued his ideas as to salvage until he found the Italian firm which succeeded in the extremely difficult task of getting over a million pounds worth of gold out of the sunken and partly submerged hull. Although the salvors deserve the utmost credit for this unprecedented feat, without Mr. Sandberg's determination and financial backing, extending over some years of discouragement and partial failure, it might never have been achieved. The same purposeful spirit has been applied to his work on the steel rail. Although the sorbitic process was first patented in 1914, Mr. Sandberg was never content to let the treatment rest on its laurels, but with the help of his metallurgical staff and the co-operation of the steel firms, with whom he was *persona grata*, he unceasingly worked out improvements in the plant until he had the satisfaction of seeing the treatment brought to a precision of application and result that is probably without parallel among heat-treatments on such a mass production scale. Moreover, he lived to see the almost entire displacement in Great Britain of previous alloy steel rails of various kinds by his sorbitic product, which has steadily increased in favour until on several railways it has become a standard requirement.

The evolution of the Sandberg method of retarded cooling for rails was an even greater triumph, for it solved a problem which for almost a decade had baffled American permanent way engineers and rail producers, their researches having failed to pin down the transverse fissure to any single cause, and still more to find a remedy. Further, the positive benefits of controlled cooling in improving the physical characteristics of the rail are so widely appreciated that this has now become a standard requirement of British railways. Thus Mr. Peter Sandberg has left his mark, and as claimed in an editorial article in our May 27, 1940, issue, entitled " The Sandberg Influence," it is no exaggeration to say that the quality and reputation of the British rail have been appreciably enhanced, both in this country and abroad, by the painstaking and original work of his firm. Those who were privileged to enjoy the personal friendship of Mr. Peter Sandberg mourn the loss of one who found an infinite zest in life—a man of many interests and profound knowledge, who added distinction to any company in which he found himself, and was withal a genial and delightful companion. It is tragic that in but little more than a year death should have claimed both Mr. O. F. A. and Mr. C. Peter Sandberg, as well as the latter's son, Mr. N. E. F. Sandberg, all of them partners of the firm, but the Sandberg influence will certainly live.

* * * *

Costa Rica Railway

AS was briefly announced in THE RAILWAY GAZETTE of July 11, agreements have been signed whereby the Costa Rica Railway Co. Ltd. has acquired the whole of the share capital of the Northern Railway Company of Costa Rica as from July 1, and from that date the lines of both companies are being operated as one system. It will be recalled that almost a year ago an extraordinary state of affairs arose between the two undertakings, and the action which has now been taken is the direct outcome of those events. The Costa Rica Railway Co. Ltd. owns 188 miles of 3 ft. 6 in. line which, since 1905, had been worked by the Northern Railway Company of Costa Rica as part of the total of 322 miles operated by the latter undertaking. The Costa Rica Company dates back to 1886 and has a con-

XUM

cession which will expire at the beginning of 1990 when the railway, rolling stock, and appurtenances will revert to the Government of Costa Rica without payment. The agreement with the Northern Railway bears the date June 15, 1905, and provides for the working of the Costa Rica line for the remainder of the concession, except the last two months. The Northern Railway was to take all receipts, meet all working expenses, and pay to the Costa Rica Company £137,100 a year subject to adjustments on certain charges being made in the debenture debt. Until a little over a year ago, although suggestions had been made by the Northern Railway that the rental should be reduced—and the Costa Rica directors had expressed their willingness to consider a more flexible form of agreement—the arrangement had proved acceptable to both parties.

The Northern Railway Company was a wholly-owned subsidiary of the United Fruit Company, an American concern, and its operations were interwoven with those of that undertaking. When rather more than a year ago the Costa Rica Company sent the usual letter of reminder that £21,000 was due on June 17, 1940, and that £44,000 was due at the end of that month, reply was made to the effect that because of the decline in traffic on the railway it would not be possible for the Northern Company to meet payment, and in the result only £71,073 was forthcoming in respect of the financial year, against £137,100 which was due. The Costa Rica directors immediately took steps to consult an American lawyer as to what course should be adopted. Their legal remedy, they were informed, was to take back their own line and work it for themselves; and at the same time, under the agreement, they acquired, by reason of the default, the voting rights of the whole of the ordinary shares of the Northern Railway Company. When the matter was discussed in THE RAILWAY GAZETTE of July 12, 1940, we expressed the view that, although the steps which would have to be taken were necessarily complicated by the exigencies of the time, there was every indication that the matter was in the hands of resolute directors who would take whatever action might be necessary to protect the rights of their stockholders. The announcement which has now been made shows that this, in fact, has been done. Mr. F. J. Oliver, Managing Director of the Costa Rica Railway Co. Ltd., has spent some time in the United States in consultation with the lawyers of the company of that country, and obviously the action which has now been taken is the sequel to his work there. The rolling stock of the Northern Railway consists of 37 locomotives, 49 wagons, and 563 freight wagons, and includes 22 locomotives, 33 wagons, and 350 freight wagons of the Costa Rica Railway. The latter company has an issued capital of £1,800,000, and there is also in issue £655,000 of 6½ per cent. first mortgage debentures, as well as £600,000 of 6½ per cent. second debentures. Interest on these loans is in default from July 1, 1940, and September 1, 1940, respectively. Last December the first debenture holders approved the suspension of interest to July 1, 1942.

* * * *

Diesels for Heavy Freight

APART from odd examples such as the Lomonossoff 1,200 b.h.p. locomotives little attempt has been made to adapt the diesel locomotive to heavy or fast freight traffic, for it is in the performance of these duties that the internal-combustion engine can show to least advantage in railway traction. But last year a quadruple-unit 5,400 b.h.p. diesel electric locomotive was tested on fast and heavy freight trains on a score of Class I railroads in the U.S.A., and as a result it and two others of the same type have been placed in regular service on the Atchison, Topeka & Santa Fe Railroad, and three of similar type have been ordered by two other railroads. A defect which was evident even in the Lomonossoff locomotive of 1925 was that the high currents and relatively low track speeds found in freight service led to heating troubles in the electric transmission, and in the American locomotives the traction motors are force-ventilated. Another thing brought out by the American tests* is that even with an adhesion factor of 4 to 1 a fine-notch control is necessary to stop coupling breakage when starting under full tractive effort, yet a control that will not reduce the fast acceleration up to 10–15 m.p.h. of which the diesel-electric is normally able.

The Santa Fe locomotive has a driving cab at each end of the complete unit and is geared for a top speed of 80 m.p.h. Its wheel arrangement is 4 (Bo—Bo) and the total weight of 923,600 lb. is available for adhesion, giving a factor of 4·2 to 1 against the maximum starting effort of 220,000 lb. Overall the length is 193 ft. and the 40-in. wheels are spread over a bogie wheelbase of 9 ft. There are four 1,350 b.h.p. two-stroke diesel engines and attached generators, one in each locomotive unit. Trains up to 6,756 U.S. tons have been handled by the locomotive, and trains of 3,150 U.S. tons up 1·6 per cent. grades. The only way in which such a heavy and expensive locomotive can show to advantage, particularly with small numbers in operation, is by greatly increased availability over steam, and probably in fast or very heavy freight service this is governed by traffic conditions just as much as by locomotive conditions. Nevertheless, the recent progress in America shows that the diesel has enough possibilities in this field to bring it beyond the drawing-board stage.

* See our Diesel Railway Traction Supplement, April and May issues

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents.)

Railway Reorganisation

3, Kensington Palace Gardens, London, W.8
July 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—For over a year and a half control of British railways has been in the hands of the Railway Executive Committee, and return of control to the boards of directors, as at present constituted, seems to be unlikely. Every effort has been, and will be, made by the Socialist Party to bring about some form of nationalisation, either before or at the end of the war, and such efforts will be supported by others who favour a form of railway board with civil servants holding the higher posts.

If the railways are to be efficiently run, it is essential that control should be in the hands of railway experts and appointed by reason of ability and not seniority. The present system of railway directorates and committee management, although it suited well enough in Victorian days, is somewhat out of keeping with modern conditions, and this fact is one of the levers used by the advocates of nationalisation.

Reorganisation from within is always better than from without, and for this reason it is very desirable that the four companies should do all that is possible to forestall political interference. To this end it is suggested that company control should be vested in boards of active finance experts and that railway control should be in the hands of executive boards composed of full-time railway officers. The finance boards should be comparatively small. (The four boards could meet as one body to deal with matters that affect the companies as a whole.) The executive boards could consist of a Chairman, a Deputy Chairman, and five or six directors (chief officers). In order to maintain a common policy and to ensure close inter-company working and standardisation it would be necessary to have a modified form of Railway Executive Committee.

Alternatively, a bolder and better scheme would be to merge the four companies into one with finance and executive boards as outlined above (in which case it would probably be necessary for the executive board to delegate local management to area boards or committees).

If, however, it is not desirable to interfere with the existing capital organisation, a similar result could be obtained by means of leasing the four railways to a management company (rentals being based upon percentage proportions of income).

Yours faithfully,

P. M. BROOKE-HITCHING

PUBLICATIONS RECEIVED

Producer Gas for Road Transport.—By Brian Reed. London: The Railway Gazette, 33, Tothill Street, Westminster, S.W.1. 1941. 9⅜ in. × 5⅝ in. 72 pp., 34 illus. Price 6s. net. Information about the technical and other aspects of the application of gas producers to road transport has not been very readily obtainable in convenient form hitherto, but this book, which in substance collects together two series of articles from the Road Transport Section of The Railway Gazette, remedies that difficulty. The book is also opportune, for development has proceeded sufficiently to show the practicability of operation by gas producers. Mr. John F. Heaton, in a foreword, expresses the opinion that even when normal times return the system may become a permanent feature of road vehicle operation, if only a modicum of encouragement be given by the Government Departments concerned and the coal industry can offer fuel at a reasonable price. Practically all the most promising designs of producers are described by the author, who also discusses the financial and operating aspects, as well as the important question of suitable fuels. Excellent diagrams and photographic reproductions are included, making the book a comprehensive treatise on the present stage of what may become a very big development.—A. A.

A Handbook of First Aid and Bandaging.—By Arthur D. Belilios, Desmond K. Mulvany and Katharine F. Armstrong. London: Baillière, Tindall & Cox, 7 & 8, Henrietta Street, W.C.2. 6¾ in. × 4¼ in. × 1 in. 630 + xii pp. Illustrated. Price 3s. 6d. net. At the present time the practical value of first aid treatment is being put to severe tests, and this book has, therefore, been prepared to give a complete training in first aid and bandaging. It has been written simply enough to be understood by a beginner and can also offer help to the more advanced student. It includes a valuable chapter on first aid in chemical warfare. Members of all grades of railwaymen have for many years taken a keen interest in first aid, and we have often published notes and pictures of competitions, and given cases of the practical uses to which the men have been able to apply their knowledge in accidents and so forth. Two chapters on Transport of the Sick and Injured have been contributed by Mr. Charles W. Hipkins who is well known as an instructor in first aid for the Great Western Railway. It is obviously the duty of every member of the community to gain as much knowledge as he can of this subject and the handy form and low price of the volume are sure to commend themselves.

Electric Furnaces.—The extraordinarily diverse uses of the electric furnaces are emphasied by the latest leaflet of the General Electric Co. Ltd., describing electrode-type salt bath furnaces used for the heat-treatment of high-speed tool steels and the hardened tips of tools and cutters. Any three-phase supply can be used in connection with the transformer which forms part of the furnace equipment.

THE SCRAP HEAP

Our contemporary, *Indian Engineering*, prints a letter sent to a railway company by a man who lives near a large junction. Here is his protest: "Why must your engines ding and dong and bang and fizz and spit and pant and grate and grind and puff and bump and chug and hoot and toot and whistle and wheeze and jar and jerk and snarl and slam and throb and roar and rattle and yell and smell and smoke and shriek and scream all the night long?"

* * *

SHE DAZZLED THE JURY

Pleading that the girl plaintiff's beauty had dazzled the jury, the San Francisco & Napa Valley Railroad, called on to pay damages in a compensation case at San Francisco, has been granted a new trial. Sixteen-year-old Belle Jeffers, whose car came into collision with one of the company's locomotives, was awarded £5,500 damages. She gave evidence for 30 minutes and during that time, the company's solicitor pleaded, her beauty dazzled the jury. So the railway company gets a new trial, says British United Press. The line is but 7 miles long, and owns 3 electric locomotives.

* * *

AN ACCIDENT NEAR SLOUGH

The unfortunate accident, resulting in five deaths, on the G.W.R., just east of Slough on July 2, when an up express from Plymouth collided with a down goods train and suffered considerable damage, brings to mind the collision of June 16, 1900, in Slough station, in which also five persons were killed, caused by a Paddington—Falmouth express overrunning all signals at Dolphin and Slough East signal boxes. The driver, a man nearly 60 years of age but stated to have looked ten years older, was held to have suffered temporary mental aberration, and the Board of Trade inspecting officer recommended a revision of the methods under which drivers were medically examined, saying that an annual examination every year from the age of 55 was called for. The guard was severely criticised for not having seen signals. On December 23, 1899, there was a collision in a fog caused by an up double-headed train overrunning all the signals at the west end of Slough station, but there were no fatalities. The fogmen had not yet reached their posts, and the drivers were held to have been very careless. Fortunately the West box signalman had put down detonators, or the accident would have been far worse.

The four-sided clock at Liverpool Street station, L.N.E.R., weighing about 2 tons and reputed to be one of the largest suspended clocks in the world. After an air raid last May it was taken down and installed on the ground near No. 11 platform as an enquiry office, with three faces serving as notice boards. It was used as a sales office during London's War Weapons Week

* * *

FIRST AID ON THE C.N.R.

Allan Hibbs, messenger with the Canadian National Telegraphs and now serving with the Royal Canadian Naval Volunteer Reserve, has been given the special award of the St. John Ambulance Association, for quick thinking and smart work with an improvised tourniquet consisting of a handkerchief and a pop bottle. When Eugene O'Byrne, a fellow messenger, fell and crashed through a glass door cutting a leg artery, Hibbs promptly applied his first aid knowledge, and surgeons said his action helped to save the other lad's life. Hibbs, in naval uniform, was personally thanked by officials of the Canadian National Telegraphs, including Mr. R. M. MacMillan, Superintendent, and Mr. Donald Ross, Local Manager. Eleven Montreal messengers, including Hibbs, received certificates of proficiency in first aid, courses in which are provided for the staff of the C N.R. throughout Canada.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NEW SOUTH WALES

Doubling, Deviation, and New Construction Works

Sanction has been accorded to the doubling and to a measure of realignment of the main southern line between Cootamundra and Junee; final survey location of the deviation is in hand and also preliminary work in connection with the doubling. Actual construction work is expected to begin almost immediately.

On the Sandy Hollow-Maryvale new construction four tunnels are involved with an aggregate length of 2 miles 12 ch.; of this length the excavation of 1 mile 12 ch. has already been completed, and in two of the tunnels a considerable volume of concreting for their lining has been poured.

QUEENSLAND

New Station at Roma Street, Brisbane

The new Roma Street station in Brisbane is now completed. Hitherto, the Central station platforms have had to be used for both suburban and country trains, causing considerable inconvenience. There is, moreover, no possibility of extending that station, the approach to which from Mayne junction was also very congested. The opening of the new station will enable long-distance trains from North Queensland to be diverted from Mayne junction and give much-needed relief to the Central station and its approach.

Colour-Light Signalling and Traffic Control

Three-aspect automatic colour-light signals have recently been installed between Eagle and Northgate junctions. As well as increasing the capacity of this section of line, the installation has enabled the signal cabin at Nundah to be closed.

The traffic control system has been extended to embrace the sections of line between Townsville and Innisfail in the Northern Division, and Toowoomba and Oakey in the South-Western Division. The former extension has established continuous control from Warwick on the main line to Innisfail, a distance of 1,148 miles.

WESTERN AUSTRALIA

Storm Damage on the Port Hedland Line

On March 1 a severe storm struck the north-west coast of Western Australia, in the vicinity of Port Hedland. During the 26 hours of the storm the rain gauge overflowed, but it is estimated that at least 16 in. of rain fell, and the wind exceeded 80 m.p.h. From Port Hedland a railway runs inland for 114 miles to Marble Bar, and hardly a mile escaped damage. In many places the ballast was scoured, and rails and sleepers swinging, in others rails and sleepers were washed away, while in many cases the line was completely buried under sand, stone, shingle, trees, etc. Telephone lines were down over the whole section, and in numerous cases poles broken and buried. Windmills were smashed and buildings unroofed and otherwise severely damaged. There were dead sheep and kangaroos all along the line. Through traffic was suspended for six weeks during repairs. In this period traffic was conveyed under railway construction conditions, trains carrying goods over each repaired section as it became available, the goods being conveyed thence to destination by road.

Although the rains will do some good to pastures in the surrounding district, and replenishment of water supplies, the damage done to private properties and losses of stock are severe.

Sleeping Car Destroyed by Fire

On February 27 a second class corridor sleeping car attached to the Wiluna-Perth train was totally destroyed by fire. No direct evidence is available as to the cause of the fire, but it apparently started between the ceiling and canopy roof of the coach. This is the second fire of its kind which has occurred recently, a similar type of coach having been destroyed in the same district in January, 1940.

SOUTH AFRICA

Report of Railway Board for 1940

The annual report of the Railways & Harbours Board for 1940 states that the revenue of the combined railways, harbours, steamships and airways services totalled £42,257,793—an increase of £2,875,388 over 1939—and the expenditure totalled £36,919,618, leaving a gross surplus of £5,338,175. Including the net surplus of £1,250,652 brought forward from the previous year, and allowing for appropriations from revenue amounting to £2,687,000 and special appropriations aggregating £1,500,000, there remains a net surplus of £2,401,827 to be carried forward to 1941.

Record Passenger Traffic

A further record for passenger traffic was created, the number of journeys undertaken totalling 123,968,979, an increase of 5,360,684 over the previous year. Revenue from passenger traffic increased from £5,924,679 to £6,727,420. Goods and mineral traffic (other than coal) totalled 22,260,008 tons with a revenue of £21,958,501. The corresponding figures for 1939 were 21,538,413 tons and £21,108,542.

Rolling stock valued at £1,181,860 was placed in service during the year; the value of stock authorised, on order, under construction or contemplated as at December 31 was £10,291,274. Of this amount £2,813,806 is to be spent on rolling stock to be obtained from overseas.

ARGENTINA

Government Acquires C.A.R. Grain Elevators

On April 2, the Government formally took possession of the Central Argentine Railway's grain elevators in the Port of Buenos Aires, on the expiry of the 40-year concession, under which they were operated by the railway. The act of transfer was performed on behalf of the company by Dr. Augustin N. Matienzo, a local director of the railway, who formally handed over the elevators to the Government representative. The elevators, which were constructed in 1901, consist of 172 silos, and have a joint capacity of 55,000 tons, half of which is for bags and the remainder for grain in bulk. They comprise five large sheds, with a central elevator, covering an area of 12,000 sq. m., and are equipped for loading six vessels simultaneously. Since 1904, when operations first began some 15,000,000 tons of grain have passed through them. They were the first elevators to be erected in Argentina, and constructed throughout of British materials, they are estimated to have still many years of usefulness.

SWEDEN

Railways Taken Over by the State

On July 1, 1941, two more private railways, the Växjö-Tingsryd, 45 km. (28 miles) 3 ft. 6 in. gauge, and Växjö—Hultsfred, 117 km. (73 miles), 2 ft. 11 in. gauge, were taken over and operated by the State Railways.

SPAIN

Nationalisation and the Narrow-Gauge Railways

By an Order dated February 12, the Minister of Public Works fixed the limits of the groups into which the companies operating public service narrow-gauge railways, not taken over by the State, are to be federated under the Law of January 24, 1941. There will be five groups, as follow: Zone 1, for all the narrow-gauge railways situated north of a line drawn from Canfranc on the French border, through Zaragoza and Valladolid, to Fuentes de Oñoro on the Portuguese frontier; Zone 2, for all those of Catalonia; Zone 3, for those of the Central and Levant regions, east of the line Cartagena-Toledo-Caceres; Zone 4, for Andalucia; and Zone 5, for the Balearic Islands. [The Spanish nationalisation scheme was fully described in THE RAILWAY GAZETTE of March 28 last, at page 360, and April 25, at page 471.—ED., R.G.]

The broad gauge railways taken over by the State under the Law and now grouped in a single system, are not affected by this Order.

TRANSITION CURVES

Nomogram for readily finding the cant required on the arc and the length of transition for specified conditions

By C. G. REDDINGTON, A.M.Inst.C.E.

SMOOTH running round railway curves depends to a large extent upon the correct relation between speed, curvation and cant being determined and maintained on the track, and the maintenance of the track is in turn facilitated by accurate adjustment of the cant. This is, of course, the essence of the method of curve adjustment propounded by Monsieur Hallade, and in this article the normal cant required on a circular curve will be taken as suggested by him, *i.e.*, as equal to the versine (in inches) on a chord length (in feet) one and a half times the speed of the train (in miles per hour). The speed for which cant should be calculated on any given portion of a curved track depends on the types of traffic using the track and the frequency of each type of train. Where only one track exists for each direction of travel and both high-speed passenger and slow heavy goods traffic use them, undue wear on the low rail will follow if the curves are super-elevated for the maximum speeds of the passenger traffic. Where separate tracks are used for slow traffic the curves on the fast tracks can be adjusted for higher speeds. The maximum speed permissible on a curved track with a certain radius and cant is outside the scope of this article, which is intended to simplify the calculation and setting out of a transition curve from the straight, where no cant exists, to a circular curve on which a predetermined speed is considered safe and of an economic value for which to superelevate the track. Mr. J. W. Spiller's paper published in the Proceedings of the Institution of Civil Engineers and an article by Mr. P. H. Jackson in *The Railway Engineer* for May, 1934, give useful data on the maximum speed permissible on curves.

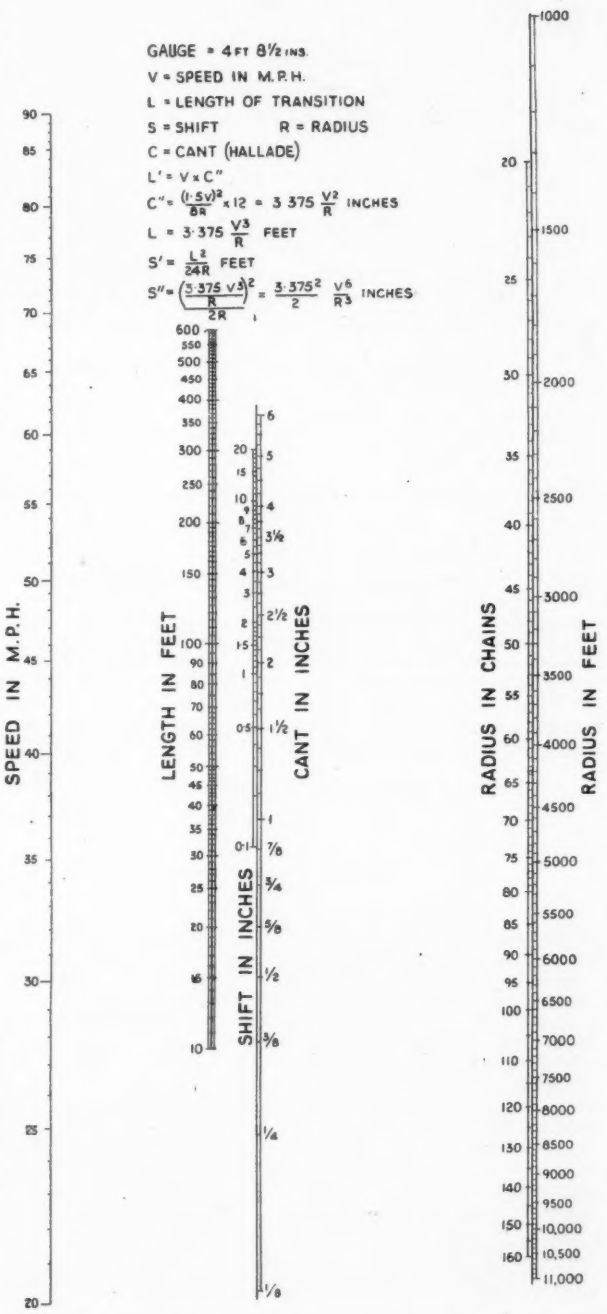
Having determined the radius of the circular curve and the speed of the traffic, then the cant required is :

$C = \frac{12\ (1{\cdot}5\ V)^2}{8\ R} = 3{\cdot}375\ \frac{V^2}{R}$, where C = cant in inches, V = speed in m.p.h., and R = radius of circular curve in feet.

From this formula it will be seen that C is dependent only upon V and R, but no account is taken of the relationship between V and R which exists as a governing factor in the maximum permissible speed. This permits the widest use of the accompanying nomogram so that it can be used for a curve on level track where it is proposed to cant for the maximum safe speed or for the curve at the summit of a gradient where only low speeds are possible though the radius may be large ; in other words, V and R are independent variables so far as this article is concerned, and their limits must be fixed by other means.

To regulate the cant in proportion to the curvature it is necessary to introduce at the tangent points of a circular curve, which has constant curvature, a transition curve whose curvature shall vary progressively from zero to $\frac{1}{R}$. The form of this curve is generally either a cubic parabola or cubic spiral, and its length is a function of the radius of the circular curve and the speed of the train, determined so that radial acceleration is applied to the train at a constant rate which does not exceed the limit which would cause discomfort to passengers. The conditions of setting out on the site should govern the choice between cubic spiral and cubic parabola, the former being suitable for new locations where chainage should be continuous as stations are measured along the length of the curve, and the latter being perhaps easier for the realignment or widening of existing tracks.

Now the length of this transition governs the cant gradient and the rate of change of radial acceleration, and, as both are proportional to $\frac{1}{R}$, a uniform cant gradient will give a uniform rate of acceleration. It has been agreed by most authors on the subject that the cant gradient shall lie between


GAUGE = 4 FT 8½ INS.
V = SPEED IN M.P.H.
L = LENGTH OF TRANSITION
S = SHIFT R = RADIUS
C = CANT (HALLADE)
L' = V x C"
C" = (1·5V)²/8R x 12 = 3·375 V²/R INCHES
L = 3·375 V³/R FEET
S' = L²/24R FEET
S" = ((3·375 V³)/R)²/2R = 3·375²/2 V⁶/R³ INCHES
SPEED IN M.P.H.
LENGTH IN FEET
SHIFT IN INCHES
CANT IN INCHES
RADIUS IN CHAINS
RADIUS IN FEET

Nomogram for design and setting out of transition curves on the site

1 in 300 and 1 in 1,080 depending on the speed for which the superelevation is calculated.

Now (*a*) 1 in 300 = 1 in. in 25 ft.
(*b*) 1 in 720 = 1 in. in 60 ft.
(*c*) 1 in 1,080 = 1 in. in 90 ft.

i.e. (*a*) Length of transition in feet = 25 × cant in inches.
(*b*) Length of transition in feet = 60 × cant in inches.
(*c*) Length of transition in feet = 90 × cant in inches.

Therefore, let the length of the transition curve in feet (L) equal the speed in m.p.h. (V) multiplied by the cant in inches (C), producing a cant gradient varying inversely with the speed, *i.e.*, L = VC.

$$\text{But } C = 3{\cdot}375\,\frac{V^2}{R}$$

$$\therefore \quad L = \frac{3{\cdot}375V^3}{R}$$

Where the shift is required it may be calculated thus:

$$\text{For a cubic parabola the shift in feet} = \frac{L^2}{24R} = \frac{L^2}{2R} \text{ inches}$$

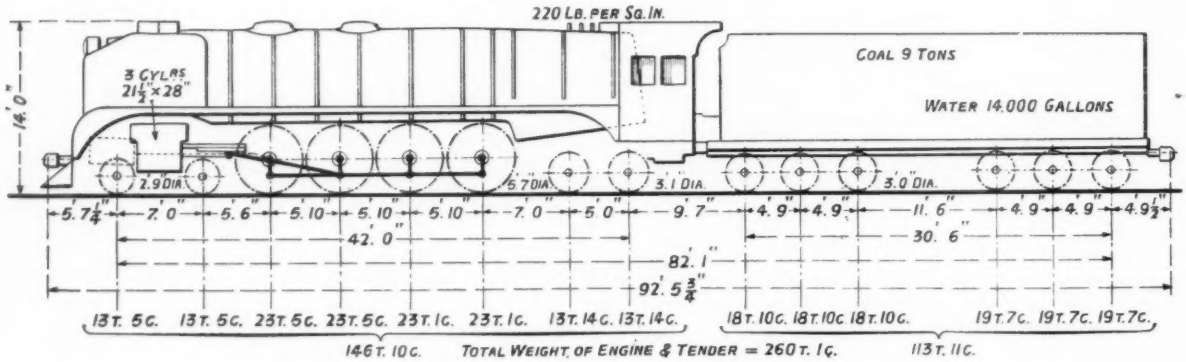
$$= \frac{\left(\frac{3{\cdot}375\,V^3}{R}\right)^2}{2R} = \frac{3{\cdot}375^2}{2} \times \frac{V^6}{R^3}$$

The accompanying nomogram has been prepared on these formulae to simplify the design and setting out of transition curves on the site. If a straight-edge (preferably a line scribed on a strip of transparent celluloid through which the scales may be read) is laid on it to cut the outer scales at the speed it is desired to accommodate and the radius of the circular curve, the cant required on the circular curve, the length of transition curve and the necessary shift are given at its intersection with the other scales.

FEATURES OF THE NEW 4-8-4 VICTORIAN LOCOMOTIVE

Further details of the new "H" class mixed traffic 4-8-4 type locomotive recently built by the Victorian Government Railways

THE new 4-8-4 type locomotive built at the Newport shops of the Victorian Government Railways, and recently introduced in service between Melbourne and Albury, New South Wales, a distance of 190½ miles, formed the subject of a brief illustrated description at page 522 of the May 9 issue of THE RAILWAY GAZETTE. The engine, with application of the kind on a Victorian locomotive. The bogie is allowed 4½ in. lateral motion either side of the centre line, and is equipped with a rocker centring device with 25 per cent. constant resistance. The springing is equalised. The trailing bogie is of novel design, incorporating for the first time in Australian practice unit brake equipment. The

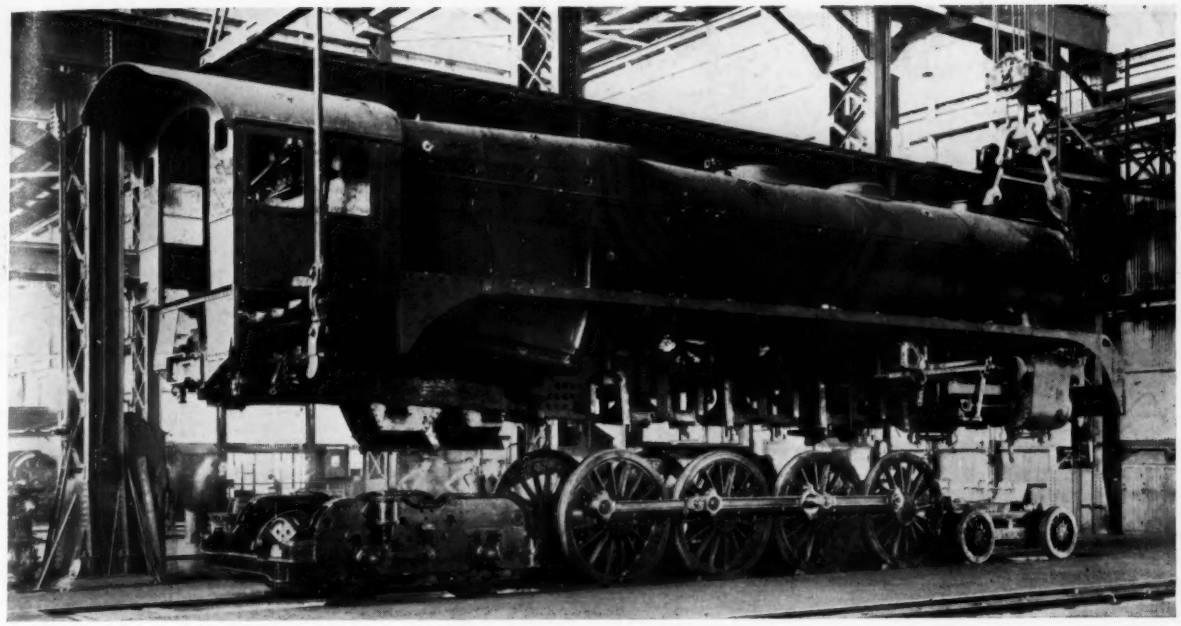


Outline diagram of new 3-cylinder 4-8-4 "H" class locomotive, Victorian Railways

two others of the same class to be built later, will ultimately be used for hauling express passenger trains over the heavily graded western main line between Melbourne and Ballarat (131 miles). Since the previous short article appeared we have received further details and photographs of the locomotive, which has three 21-in. by 28-in. cylinders, coupled wheels 5 ft. 7 in. dia., a total heating surface, including 800 sq. ft. of superheating surface, of 4,780 sq. ft., grate area 68 sq. ft., and boiler pressure 220 lb. per sq. in. Engine and tender in working order weigh 260 tons.

The cast steel frame stretchers and rear cradle frame incorporating trailing truck radial pivot bearings, as well as main frames and cylinder blocks, were produced in Australia. Individual bar frames were used, in preference to a complete locomotive bed, on account of considerations of cost and difficulty of replacement. The coupled wheels are of cast steel with conventional spoke-type centres and rolled steel tyres shrunk on and secured by studs. No lateral play is allowed, but the second and third pairs of drivers have thin flanges. The journals of the leading bogie, which is of cast steel, have S.K.F. roller bearings, this being the first frame is similar to the well-known 4-wheel Delta design, but is entirely fabricated by welding from mild steel plate pressings, mainly ½ in. thick, reinforced where necessary with ⅝-in. strips. The design was developed from the all-welded 2-wheel booster trailing trucks applied to seven of the "X" class 2-8-2 freight locomotives. The journals, which are outside, have roller bearings. The bogie has three point suspension.

The cylinders and valves have renewable cast iron sleeves. The design of the crossheads and slidebars is a radical change, an enclosed single bar marine type being adopted for the first time; this has enabled substantial reduction to be made in the reciprocating weights. The piston valves of the outside cylinders are operated by Walschaerts valve gear, upon which is superimposed the drive for an improved type of conjugated valve gear actuating the inside valve. Two pairs of conjugated drive levers passing each side of the reversing links are pivoted at their forward ends on the pins joining the combination levers to the outside valve spindles, and at their rear ends to rocker arms located at the back of the reversing links at the outer ends of two coupled transverse shafts which drive the inside valve spindle through a pivoted shaft by the



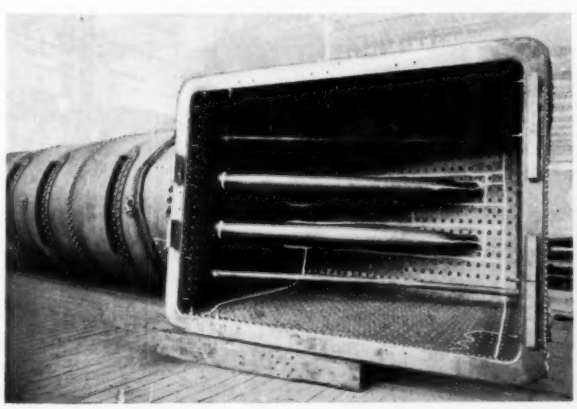
Boiler and chassis of new "H" class locomotive being lowered on to wheels by two 75-ton overhead cranes in the Newport workshops, Victorian Government Railways

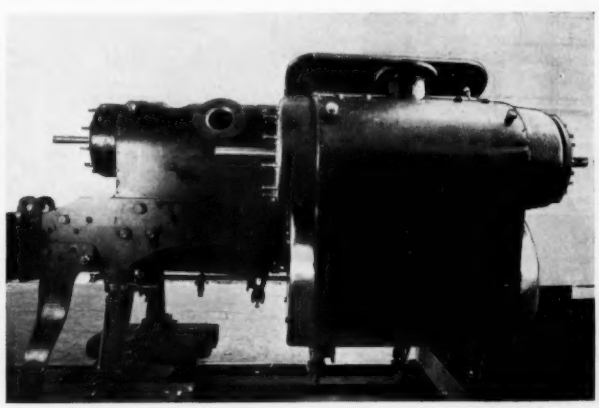
familiar two-to-one principle. The gear is infinitely adjustable in so far as the inside valve events can be corrected independently of the outside valves With the fine limits required of modern sustained high-speed short cut-off operation this feature is of great importance. Maximum valve travel in full gear is 6½ in. Reversing is effected by a Franklin type F-1 Precision power unit with hand-wheel control. Air-operated spring-loaded cylinder drain cocks are fitted for the first time in Victoria. Valves are adjusted for ¼-in. lead and 1½-in. lap. There is no exhaust lap. Maximum steam port opening is 1¾ in., and the drive sequence is right hand (leading), left hand, centre.

All driving axles, except the leading crank axle, are solid forged from 35-40 tons steel, and all but the main driving axle are 9¼ in. dia. with 10 in. by 12 in. journals, and oil-lubricated plain bearings. The main (No. 2) driving axle is 10 in. dia. with 11 in. by 12 in. journals. The crank axle is built up from manganese-molybdenum high-tensile steel with balanced web extensions and a crank pin, 9¾ in. dia. The outside crank pins are 5¼ in. × 4¾ in. for leading, intermediate, and trailing coupled wheels, and the main drivers have 7¾-in. × 4½ in. pins. All big and little end bearings, crank pins and valve motion parts have plain bushed bearings, and are oil-lubricated. The outside big ends are of the split bushed type, measuring 7 in. × 6¾ in.

The engine truck centre pin, trailing truck pivot and radial side bearings, also spring equaliser pivots, etc., are lubricated from oil boxes with wick trimmings. Engine-tender standard draft gear is of the two-bar radial-buffer type and soft-grease lubricated. The spring rigging of ingot iron is of conventional design incorporating equalisers and elliptic springs formed from carbon spring steel. The revolving weights are fully balanced in their respective wheels, and 30 per cent. of the reciprocating weight is balanced and is distributed over four wheels. The hammer blow at 66 m.p.h. is consequently only 1 ton 16 cwt.

A Wakefield No. 7 six-feed mechanical lubricator of 8 pints capacity and driven by linkage off the reversing link is provided on the left-hand footplate for cylinder and valve lubrication. All other points are individually lubricated from oil



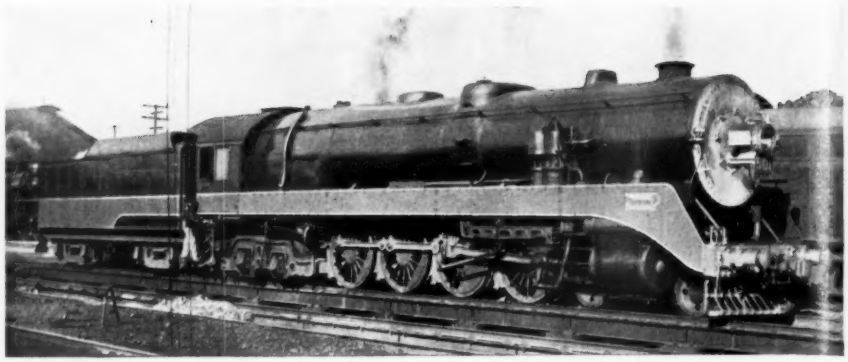


Left : Interior view of all-steel welded firebox showing thermic syphons and arch tubes. Welds show up as white lines. Right : Arrangement of cylinders and smokebox saddle, showing inside cylinder ahead of those outside the frames

boxes with wick trimmings. Piston and valve stems have metallic packing.

The all-steel boiler of modified Belpaire type is the largest ever constructed for a locomotive in Australia. The three-course conical barrel is 6 ft. 8¾ in. inside dia. at the first course and 7 ft. 3 in. inside dia. at the firebox end. The steel firebox is 10 ft. 7 9/16 in. long × 6 ft. 10¼ in. wide at the foundation ring. Two Nicholson thermic syphons and two 3-in. outside dia. arch tubes are provided to increase direct heating surface in the zone of most intense heat and to increase water circulation. The grate area of 68 sq. ft. has necessitated the application of mechanical firing for the first time on this system. The Standard Stoker Company's improved type "MB" mechanical stoker, driven by a reversible 2-cylinder double-acting engine located beneath the cab on the left side, is fitted. The grate is of standard firebar type with two hand-operated drop sections at the front. No provision is made for shaking, as clinkering is largely prevented under stoker-firing conditions. The boiler has 187 weldless steel tubes of 2¾ in. outside diameter, and 38 steel flue tubes of 5 1/16 in. outside dia. Twin tangential steam separators are housed in the trailing dome, through which steam is passed to the Santa Fe type balanced throttle located in a forward dome through two 7½-in. dia. internal steam pipes. External steam pipes from the superheater header are 5¾ in. dia., and all steam pipes, ports, and passages, together with exhaust passages, are streamlined.

The firebox and combustion chamber are completely welded, with the sole exception of the tube plate, which is riveted for easy renewal. The M.L.S. marine type 38-unit superheater has short-loop birfurcated elements of 1¼ in. outside dia. with a heating surface of 800 sq. ft. The three Coale safety valves, one muffled and two pop, are set to blow off at 225-222 lb., and 227-225 lb., respectively. The working pressure is 17 lb. higher than any yet in use on the Victorian Railways, and is the highest in Australia. At 85 per cent. nominal boiler pressure (220 lb.) the tractive effort is 55,000 lb., with 3·76 factor of adhesion. Saturated steam for all auxiliary equipment is supplied from a turret on the top of the firebox with long-spindled stop valves, arranged on a bracket in the cab and suitably labelled. Two Klinger standard reflex gauge glasses are fitted, that on the fireman's side being mounted on a water column. The injector starting handles are of trigger type, located on each side of the firebox. The firebox is of 24-26 tons firebox quality steel. It is stayed in the conventional manner with 1-in. rigid steel stays and with 667 flexible stays. All inside firebox seams, including arch tube and thermic syphon joints, are welded, with the exception of the front tube plate, which is riveted in order to be easily renewable. The brick arch is supported between the arch tubes and syphons. The two syphons are together in the centre of the firebox flanged on each side by an arch tube.



One of the 4-8-4 "500" *B class locomotives of the South Australian Railways*

The self-cleaning type extended smokebox is 9 ft. 7½ in. long and 7 ft. 7 in. outside dia. The top from the front to just behind the twin chimneys is flat and inclined at an angle in order to permit of the use of longer chimneys and to improve the draught effect of the improved smoke deflector plates. The adoption of the duplicated arrangements was necessitated in order to keep the diameter of the chimney within reasonable limits, so as to clear the structure gauge.

The blast pipe is bifurcated with specially designed twin annular (radial) ported multi-jet blast pipe orifices, each of 5½ in. dia., discharging into twin chimneys arranged fore and aft, each 21 in. dia., and spaced at 22-in. centres. The blower rings are cast integrally with the blast pipe caps, and other smokebox arrangements, such as spark arrester meshing, conform to standard practice.

The air brake system is Westinghouse Schedule A-6ET with one 7-in. cross-compound compressor. The A-6ET system, now being widely applied throughout Australia, does away with the engine triple valve, its functions being incorporated in the new A-6 distributing valve. The tender brake gear is also novel to this system. A single 16-in. × 12-in. cylinder operates clasp type brake gear on all tender truck wheels through conventional rigging, incorporating a "J" type slack adjuster.

The rectangular type tender has a loaded weight of 113 tons 11 cwt., and accommodates 14,000 gal. of water and 9 tons of coal—sufficient for non-stop running in fast passenger or freight service between Melbourne and Albury. The bunker and tank are unit-fabricated and bolted to the all-welded fully-equalised underframe. It is carried on six-wheel all-welded fully-equalised bogies with SKF bearings.

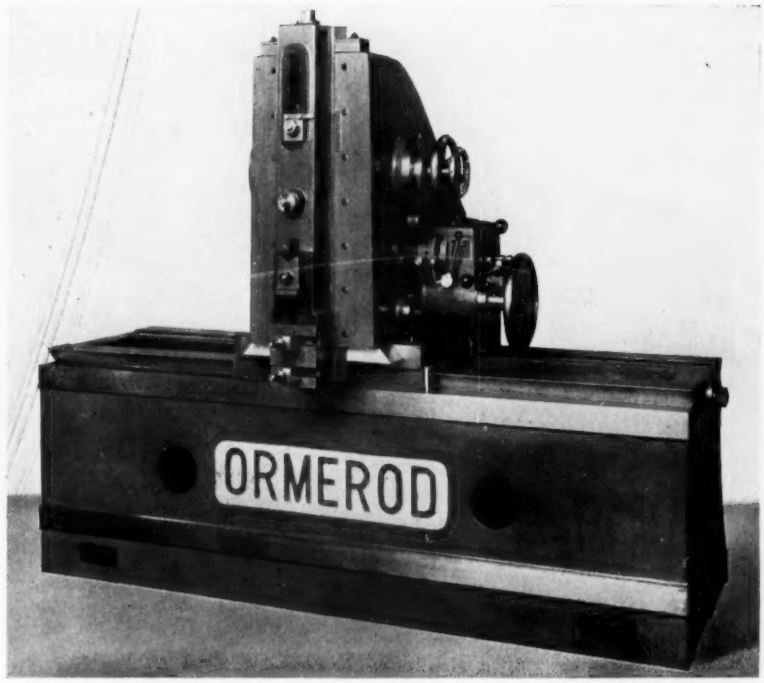
As we remarked in our issue of May 30 (p. 595), the claim that the new Victorian locomotive is the largest in Australia may be qualified by comparison with the South Australian "B500" class 4-8-4, and the new South Wales "D 57" class 4-8-2 locomotives. The nominal tractive effort of the former is 51,000 lb., plus 8,000 lb. when the booster is in use, and of the latter 56,000 lb. That of the new engine is 55,000 lb., but its weight of 146 tons exceeds the 144 and 139 tons respectively of the other two.

A New South Wales "D 57" 4-8-2 on a heavy freight train

XUM

A NEW TRAVERSING HEAD SLOTTING MACHINE

A NEW type of traversing head slotting machine has recently been developed by Ormerod Shapers Limited, of Hebden Bridge, Yorkshire. It is designed primarily for machining stacked plates, and is self-contained and portable. The machine consists of a sturdily proportioned base, well ribbed internally, and with side slide ways to carry the headstock. Machined facings on the front of the bed enable work to be set up quickly and accurately. The headstock is driven by a flange-mounted motor, developing 4 h.p., and has a built-in gearbox, with a range of three speeds of 28, 38 and 56 strokes per min. to the ram, which has an adjustable stroke up to 8 in. Vertical adjustment to the ram is also provided. The reciprocating motion to the ram is obtained from a large driving wheel and closed-end type bed motion. The length of stroke is adjustable whilst the machine is in motion or at rest.



Four rates of reversible power feed are provided to traverse the headstock along the bed; the length of traverse is 5 ft. 3 in. on a standard bed 7 ft. 3 in. in length. A safety device is fitted to prevent damage through over-feeding. In addition to the power feeds, fine adjustment by hand is obtainable through a large-diameter hand wheel. Rapid power traverse for quick setting is also provided, and this is so arranged that it operates in the reverse direction to the power feed. The headstock is also fitted with an in-and-out traverse of 12 in. A steel insert is dovetailed into the ram head to carry toolholders of the steel planer type. A serrated tool stop is also supplied to take the end thrust of the tool.

Pump lubrication to all gears and shafts is provided by means of a positive driven pump fitted with a filter and a visible indicator. The controls of the machine are conveniently grouped for the operator. The working floor space required for the machine is 7 ft. 6 in. by 5 ft. 3 in., and the approximate weight is 65 cwt., including electrical equipment.

Swiss Federal Railways in 1940

THE Swiss Federal Railways own and work 2,885 km. (1,793 miles) of line and under arrangements with other administrations work portions of adjacent frontier lines. Of the total owned and worked 1,088 km. (676 miles) are double-track, and about 2,175 km. (1,352 miles) are electrified. In 1939 the railways secured, for the first time since 1930, a net profit over and above working expenses and financial charges. This profit in 1939 amounted to fr. 7,478,152, and the corresponding profit for 1940 has increased to fr. 13,404,932. In reviewing the results for 1940 the administration attributes the more favourable financial position mainly to war conditions, which had also aided the 1939 traffics. There was a drop in import and export traffic, and there was almost a complete absence of foreign tourists and of passengers in transit, but internal traffic was intensified. Military traffic was extremely heavy and the numerous restrictions (such as petrol rationing and requisitioning of vehicles), on road traffic, almost abolished motor competition. At the same time there was a substantial increase in goods transit traffic.

Goods traffic ton-kilometres exceeded those of 1939 by 47 per cent. and even surpassed the previous record of 2,208·6 million ton-kilometres in 1929. The advance in goods receipts in 1940 over 1939 was, however, only 15·7 per cent. because of the large proportion of low-rated military traffic and long-distance transit traffic. Passenger receipts, in 1940, although showing an improvement over those of every year since 1932, are still well below the record figure of fr. 159·1 millions in 1930, mainly because of the constantly increasing use of reduced fares. Passenger receipts in 1940 represented 35·5 per cent. and goods receipts 64·5 per cent. of the total traffic receipts, compared with averages of 41·2 per cent. and 58·8 per cent. respectively, for the ten years before the war. The accompanying table compares results in the past two years. (At present the rate of exchange is about fr. 17·35 to the £):—

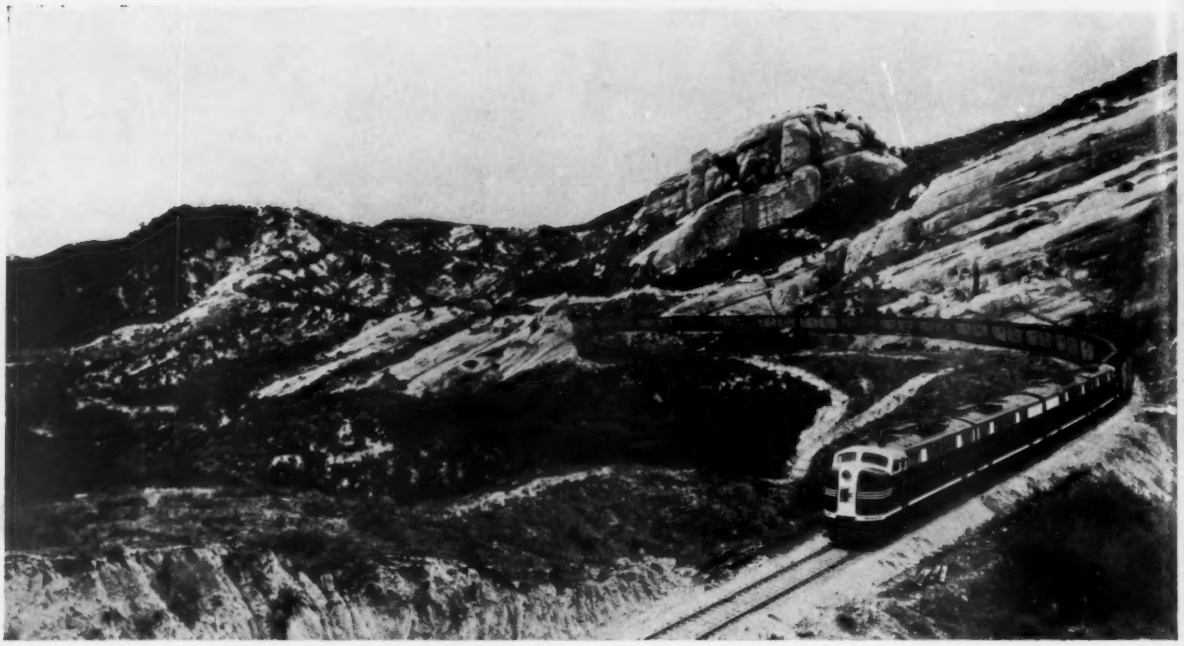
	1939	1940
Passengers	119·12 millions	124·51 millions
Goods traffic, tons	17·07 millions	20·25 millions
Train-kilometres	46·36 millions	47·83 millions
Ton-kilometres	1,978·5 millions	2,903·4 millions
Operating ratio, per cent.	61·99	60·02
	Fr.	Fr.
Passenger receipts	133,639,884	136,217,605
Goods and postal receipts	214,167,434	247,826,865
Gross receipts	361,168,840	397,795,443
Expenses	223,895,145	238,767,329
Net receipts	137,273,695	159,028,114

The increase in working expenses was only 6·6 per cent. in comparison with 1939. The increase was due less to the growth of traffic than to the higher cost of materials and certain concessions to the staff. The number of staff in regular employ in 1940 was 27,488, an increase of 160. During the year 17 level crossings were abolished, and improved protection arrangements were installed at 16 crossings. Electric working was introduced during the year on the leased line Vevey—Puidoux—Chexbres. It is proposed to use the surplus of fr. 13,404,932 on profit and loss account towards covering earlier insufficient amortisations on construction capital.

XUM

DIESELS FOR HEAVY FREIGHT

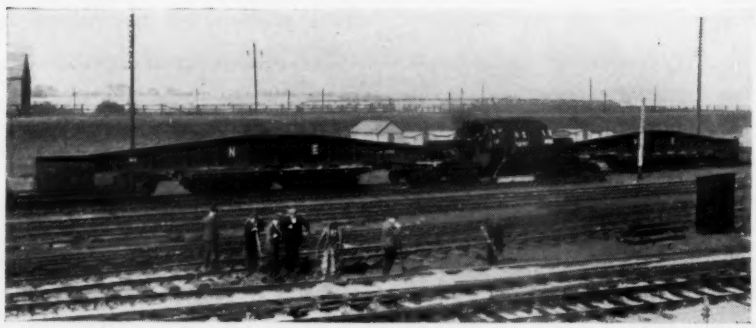
(*See editorial article on page* 52)



The first main-line diesel freight locomotive at work on the Atchison, Topeka & Santa Fe Railway. The locomotive is in four units with a total of 5,400 *b.h.p.*

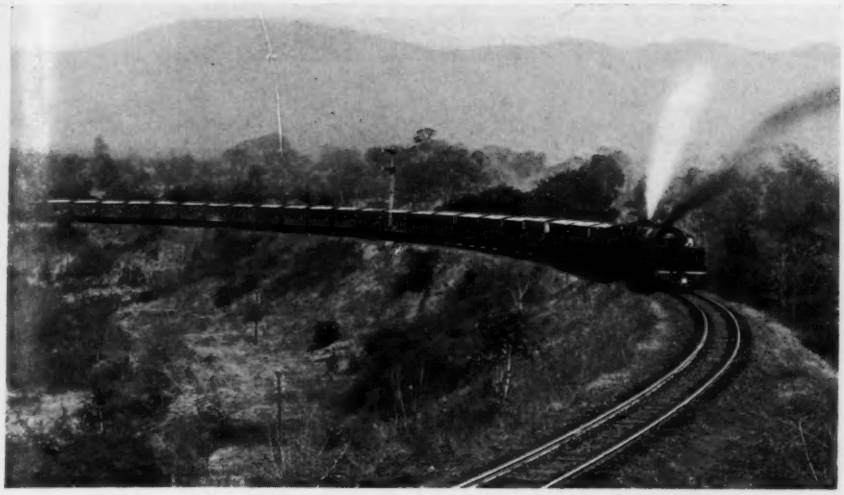
An Exceptional Load on the L.N.E.R.

An exceptional load recently conveyed from the North Eastern Area of the L.N.E.R. to the Midlands consisted of a stator 20 ft. long, 13 ft. 1½ in. wide, and 12 ft. 11 in. high, weighing 130 tons. The stator was loaded on a "Transformer A" wagon, which has a carrying capacity of 70 tons, and in order to take the additional weight it was necessary to employ a cantilever on two 60-ton flat Q's, with the balance weights on two Flatrols J. The excessive width of the load necessitated the occupation of the opposite line throughout the journey, and as 15 m.p.h. was the maximum speed at which it could travel, conveyance was limited to Sundays so as to interfere as little as possible with normal traffic working. Some idea of the effect on traffic working may be gathered from the fact that on one of the Sundays when the load travelled 35 miles, no fewer than 20 freight trains had to be diverted from their normal routes. The throughout journey was spread over six Sundays. Frequent stops had to be made *en route* to move the load so that bridges could be negotiated, and a considerable number of disc signals had to be dismantled temporarily. The throughout journey was completed without a hitch.



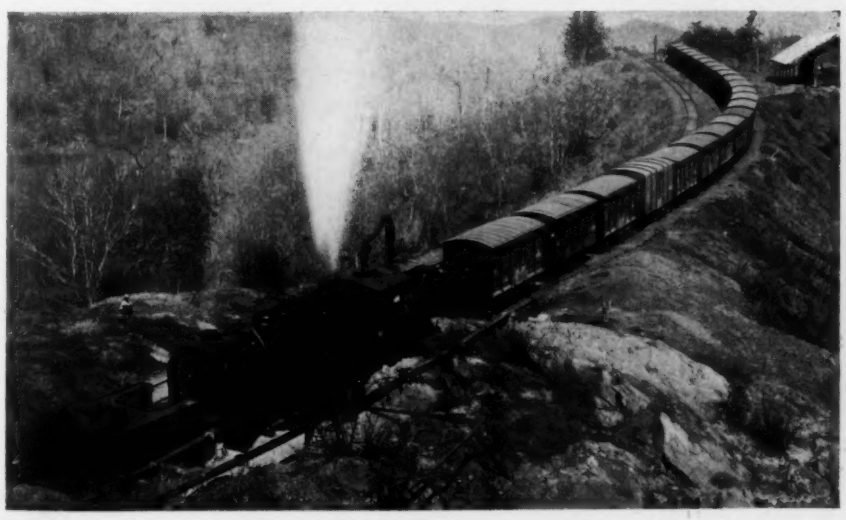
The 130*-ton stator loaded (left), and (above) ready for the journey*

SCENES ON THE BURMA RAILWAYS



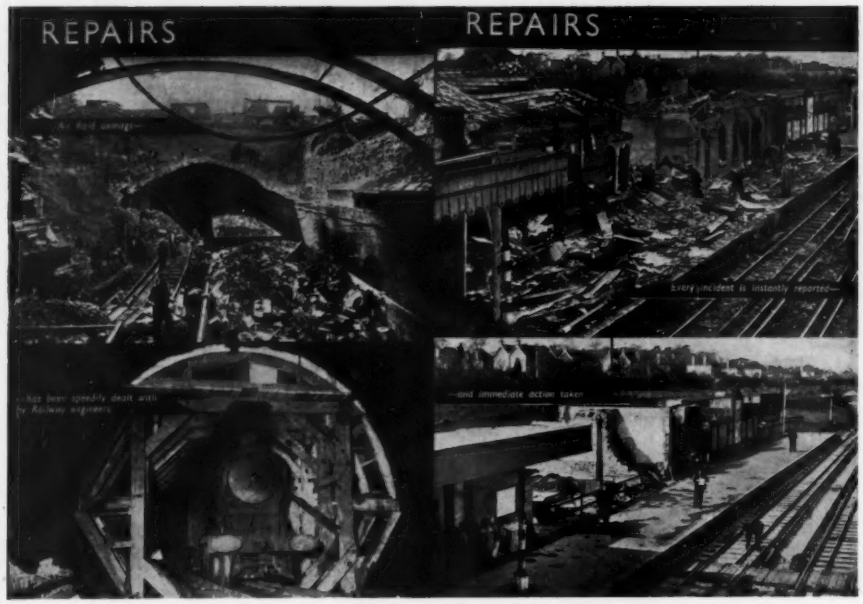
Left: 210-ton goods train on 1 in 25 grade hauled by 2-8-0 + 0-8-2 Beyer-Garratt locomotive. This type of engine handles such trains on 17-deg. (5-ch.) reverse curves, following one another in quick succession, on the Lashio and Southern Shan States branches, where there are approximately 13 and 16 miles, respectively, continuously inclined at 1 in 25, except in stations. On the remainder of these branches the ruling gradient is 1 in 40; the gauge is one metre

Right: A view of the east end of platforms Nos. 1 to 5 at the main station of Rangoon. Since this photograph was taken, two more platforms, Nos. 6 and 7, have been added on the left. It will be noted that practically the whole of each platform is roofed in, and the station is in every way a convenient modern structure. Two local trains can be accommodated end-on at each platform, and there are central scissors crossovers to facilitate their movements. The passenger yard is fully interlocked and controlled by three main signal boxes, containing 100, 75, and 92 levers respectively



Left: On the main ascent of the Lashio branch from the plains near Mandalay, the 1 in 25 grade is broken by four reversing stations. This illustration depicts a goods train at Fourth Reversing station. Behind it are the buffer stops and then a sheer drop of many hundreds of feet. The section of line between Second and Third Reversing stations passes in tunnel under that on which this train is standing. The train is headed by one of the 2-8-0 + 0-8-2 Beyer-Garratt locomotives

British Railways and the War—76



Pages from the "British Railways in War Time" booklet, showing air-raid damage and repairs

Interior of British railway exhibition coach now on tour in the provinces with a display of photographs showing something of the part railways are playing in the conduct of the war

RAILWAY NEWS SECTION

PERSONAL

The third supplement to *The London Gazette* of Friday, July 4, 1941, contains the following entry under Territorial Army, Royal Engineers:—

Colonel Sir James Milne, Kt., K.C.V.O., C.S.I. (42375), to command the unit 17th Apr. 1941, *vice* Colonel The Lord Stamp, G.C.B., G.B.E., D.Sc. (37820), deceased.

ROAD TRANSPORT WAR SAVINGS COMMITTEE

The Minister of War Transport, Lord Leathers, has consented to become President of the War Savings Committee of the Road Transport Industry of which Mr. Shrapnell-Smith is Chairman. Fourteen national organisations are represented, including the Transport & General Workers' Union and the National Union of General & Municipal Workers. The latest additions to the committee are Mr. G. H. Brooks, representing the London Passenger Transport Board, and Mr. J. H. Turner, representing the Standing Joint Committee of Road Hauliers National Organisations.

Sir Robert Vaughan, K.B.E., of Dolgelly, who died on January 16, has left estate valued at £20,452 (net £16,571). He has left £200 each to the Railway Benevolent and the Great Western Railway Helping Hand Fund, and £100 to the Pwllheli Railway Men's Aid Society.

Mr. Ernest James Boag, Secretary of the Canadian Department of National Defence and Director of Civilian Personnel at Ottawa, retired on May 31. Mr. Boag began his career in the goods department of the Lancashire & Yorkshire Railway, and was later with the Grand Trunk Railway at Montreal. He left railway work in 1903 to join the Canadian Civil Service, from which he now retires.

The Minister of War Transport has appointed Mr. B. Eliot Common to be Regional Port Director for the North Eastern Region of England, which extends from the Tweed to the Tees.

Mr. Antonio E. Vera has been appointed General Manager of the Southern Pacific Railway of Mexico, with headquarters at Guadalajara, Jalisco.

Mr. J. C. L. Train, Engineer, Scottish Area, L.N.E.R., who, as recorded in our July 4 issue, has been appointed Engineer, Southern Area, entered the Engineer's Office of the former North British Railway in Edinburgh as a pupil in 1908 when the late Mr. James Bell was Chief Engineer and Mr. C. J. Brown, Assistant Engineer. Subsequently, Mr. Train served under both Mr. C. J. Brown and Mr. W. A. Fraser when they were chief engineers in that office. During this period he gained experience both in the office and outside on such works as the Portobello widening, the Thornton-Leven widening, and Arbroath station reconstruction, and passed his Institution of Civil Engineers' examinations. In 1912 he accepted a post in London under his former chief, Mr. C. J. Brown, who had by that time become Chief Engineer of the former Great Northern Railway. Thereafter as Assistant Resident and then Resident Engineer, he had charge of the construction of the Tickhill Light Railway, the Kirkstead & Little Steeping Railway, the Hertford & Stevenage Railway and the goods way, King's Cross. In August, 1914, he enlisted in the Royal Fusiliers and was later given a commission in a Field Company, R.E. He served on the Ypres, Somme, and other fronts, and after being wounded in 1916 was given command of the Drafting Company at the R.E. Depot, Newark-on-Trent. Mr. Train returned to France subsequently and was awarded the M.C. in 1918 while in command of a Field Company, R.E. He was demobilised in June, 1919, with the rank of Major, and in 1921 he was appointed Personal Assistant to the Chief Engineer, G.N.R. In this capacity he was made responsible by Mr. Brown for, among other tasks, introducing for the first time to this country the Hallade track recorder and Hallade method of adjusting curves, and for some early experiments in the welding of worn crossings, the sectioning instead of the weighing of rails, and the working of amalgamated length gangs. Three years later Mr. Train was appointed Assistant Industrial Agent in the Chief General Manager's Office, and was placed in charge of the Works Section of that office in 1925. In November, 1927, Mr. Train was appointed Assistant to the Chief General Manager (Works), and two years later he was transferred to Glasgow as District Engineer, Western Section, Southern Scottish Area. In 1934 Mr. Train was appointed Assistant Engineer (Maintenance), Southern Area, and when Mr. Inglis was appointed Engineer, Southern Area, L.N.E.R. at the beginning of 1937, Mr. Train was appointed Assistant Engineer of that Area. He became Engineer, Scottish Area, in October, 1938.

Photo [*Lafayette*

Mr. J. C. L. Train

Appointed Engineer, Southern Area, L.N.E.R.

Mr. Christer Peter Sandberg, C.B.E., M.Inst.C.E., the well-known consulting and inspecting engineer, whose death on June 26 we recorded in our July 4 issue, was born in Sweden in 1876. In partnership with his brothers, the late Mr. N. P. P. Sandberg and Mr. O. F. A. Sandberg, Mr. Peter Sandberg took over the business established in London by their father, Mr. Christer Peter Sandberg, and acted as inspecting engineer for the Chinese Government Railways, the Siamese State Railways, and various colonial railways. Mr. Sandberg was best known for the work that he did towards the improvement in the physical characteristics and wearing capacity of the

steel rail. In 1914 he patented the sorbitic heat-treatment for rails, first applied as an air quenching of the rail-heads after rolling, and later developed into the present regulated sorbitic treatment, applied by a combination of finely atomised water and air under pressure. In 1928 Mr. Sandberg, jointly with his brothers, patented the Sandberg method of controlled cooling of rails, in order to overcome the shatter-cracking in rail-heads that had produced the serious menace of the transverse fissure in the United States, and thereby not only succeeded in evolving a complete cure, but effected such an improvement in the physical characteristics of the steel that controlled cooling is now the standard practice for British rails, and is in almost universal application, under license, in the U.S.A. Articles describing and illustrating the latest methods of applying the Sandberg sorbitic process and controlled cooling appeared in the January 10, 1936, and May 27, 1940, issues of THE RAILWAY GAZETTE. In the 1914-1919 war Mr. Sandberg found that shell forgings which had been rejected owing to low yield under test could be restored to serviceability by sorbitic treatment, which he offered to the Government free of royalty, with the result that millions of these forgings were thus saved. He was also the patentee of a steel sleeper and other details of railway track. In another realm he became famous in connection with the salvage of the bullion from the sunken *Egypt*, which, with other observations on his career, forms the subject of editorial comment on p. 51.

The late Mr. Christer Peter Sandberg

A member of Messrs. Sandberg, Consulting and Inspecting Engineers

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Mr. F. W. Carr, Mechanical Engineer, Southern Area (Eastern Section), L.N.E.R., retains his position in the reorganisation of the Chief Mechanical Engineer's Department which we recorded in our June 20 issue. Mr. Carr is a native of York, where he was educated, and served an apprenticeship with the North Eastern Railway, obtaining varied experience. In 1910 he was appointed Motor Vehicle Superintendent. During 1915-16 he held an appointment under the Ministry of Munitions, and served at Woolwich Arsenal, while from 1916 to 1919 he was attached to the British Expeditionary Forces in France, where he attained the rank of Lt.-Colonel, R.E. On demobilisation he was appointed Assistant Works Manager at the locomotive works, Darlington, and in 1921 became Works Manager in charge of the locomotive works at Gateshead. On amalgamation, in 1923, Mr. Carr was appointed Carriage & Wagon Works Manager, York, and in 1927 proceeded to Darlington as Works Manager in the locomotive shops. He went to the Gorton locomotive works as Works Manager in 1933 and subsequently acted as Assistant Mechanical Engineer, Stratford, until January, 1937, when he was confirmed in the position. In June, 1938, Mr. Carr was appointed Mechanical Engineer, Southern Area (Eastern Section).

Mr. R. A. Smeddle, Locomotive Works Manager, Darlington, L.N.E.R., who, as recorded in our June 20 issue, has been appointed Mechanical Engineer, Darlington, was educated at Aysgarth and Harrow. He served in the R.F.A. in France during the latter part of the last war and also in the Army of Occupation. Towards the end of 1919, Mr. Smeddle became a pupil of the late Sir Vincent Raven, and later, of Sir Nigel (then Mr.) Gresley. Subsequently he had experience in the Running Department of the L.N.E.R. at Leeds and the Traffic Department at York. In 1925 Mr. Smeddle was appointed Assistant Works Manager at Cowlairs, and in 1928 was appointed Assistant Carriage & Wagon Works Manager at York. He was transferred to London as Outdoor Carriage & Wagon Assistant in October, 1929, and in April, 1931, returned to Cowlairs as Works Manager. In May, 1936, Mr. Smeddle was made Locomotive Works Manager, Darlington, and has held this position until now when, under the reorganisation of the Chief Mechanical Engineer's Department, he has been appointed Mechanical Engineer, Darlington, with control of the North Road, Faverdale, Shildon, and Walker Gate shops.

Mr. J. F. Harrison, Locomotive Works Manager, Gorton, London & North Eastern Railway, who as recorded in our June 20 issue has been appointed Mechanical Engineer, Gor-

Mr. F. W. Carr

Mechanical Engineer, Southern Area (Eastern Section), L.N.E.R.

Mr. R. A. Smeddle

Appointed Mechanical Engineer, Darlington, L.N.E.R.

Photo] *[Lafayette*

Mr. J. F. Harrison

Appointed Mechanical Engineer, Gorton, L.N.E.R.

ton, was educated at Malvern Wells and Wellington College. He served an apprenticeship for 2½ years and was for a year a pupil under Sir Nigel (then Mr.) Gresley at the Great Northern Railway Company's workshops at Doncaster. Mr. Harrison was made Foreman Carriage Sheds, Locomotive Running Department, at Doncaster in 1924; Foreman, King's Cross sheds, in 1925; Running Shed Foreman at Wigan in 1926; Technical Assistant, Headquarter's office, Locomotive Running Superintendent, London, in 1929; Assistant to Locomotive Works Manager, Gorton, Chief Mechanical Engineer's Department, in 1930; Assistant to Locomotive Works Manager, Doncaster, C.M.E.'s Department, in 1937; and Locomotive Works Manager, Gorton, in 1938.

We regret to record the death on July 12, at the age of 73, of Mr. Ernest Kilburn-Scott.

At a meeting of the Birmingham Horse & Motor Vehicle Owners' Association on July 8, Mr. O. Cecil Power, J.P., Traffic Manager of the Birmingham & Midland Motor Omnibus Co. Ltd., was re-elected Chairman of the association for the 30th successive year. Mr. Power is also President of the association, which is the oldest road transport association in the country.

Mr. James Whiteford Murray, D.L., of Pirniehall, Drymen, Dumbartonshire, a Director of the former Caledonian Railway Company, and of the L.M.S.R. from January 1, 1923, to July 29, 1937, has left personal estate in Great Britain of £38,515.

Sir Walter Benton Jones, Chairman of the United Steel Co. Ltd., has been appointed also Managing Director in place of Mr. N. H. Rollason (who has now resumed his duties as full-time Managing Director of John Summers & Sons Ltd.). Three branch General Managers, Mr. Langton Highton, Mr. C. F. Ward Jones, and Mr. Gerald Steel, have been appointed Directors.

Mr. Walter Pratt, retired General Manager of sleeping, dining, and parlour cars, and hotels of the Canadian National Railways, died in Winnipeg on June 11 in his 73rd year. Mr. Pratt had a railway career extending over half a century, during the greater part of which time he was connected with the administration of sleeping and dining car services and hotels of the C.N.R. He was born in Sibbertoft, Northamptonshire, England, January 18, 1869, went to Canada in 1883, and from 1923 to 1934 lived in Montreal.

Sir Clifford John Cory, whose death we recorded in our February 14 issue, has left unsettled estate valued at £445,108 (net £373,461). Sir Clifford was Managing Director of Cory Brothers & Co. Ltd. and a Chairman of the Corringham Light Railway.

Notes and News

Leopoldina Railway Company.—Because of the delay in receiving its annual accounts from Brazil this company states that it will not be possible to hold the annual meeting in July as has been customary, but that it will be held as soon after receipt of accounts as possible.

Slough Rail Accident.—The Great Western Railway has announced that it will accept liability in connection with the accident at Dolphin Junction, Slough, on Wednesday, July 2, when, as we recorded last week, a passenger train from Plymouth to London was in head-on collision with a goods train, causing the loss of five lives.

Toronto to New York Air Line.—Trans-Canada Air Lines inaugurated an air mail service between Toronto and New York on April 29. The twice-daily passenger service began on May 10. The aircraft cover the 377 miles in 2 hr. southbound and 2¼ hr. northbound. Connections are made at Toronto with transcontinental services and also with shorter routes to eastern and western cities.

Great Southern Railways (Eire).—For the 25th week of 1941 the Great Southern Railways Company reports passenger receipts of £44,475 (against £37,482), and goods receipts of £49,762 (against £46,880), making a total of £94,237 (against £84,362) for the corresponding period of the previous year. The aggregate receipts to date are passenger, £920,860 (against £787,787); goods £1,243,869 (against £1,115,223); making a total of £2,164,729 (against £1,903,010).

Association of Private Owners of Railway Rolling Stock.—This year marks the conclusion of the first 50 years of activity of the association. Its formation on May 6, 1891, resulted from a dispute with the railway companies. The companies had issued revised standard specifications for the repair and maintenance of private owners' wagons, and these regulations were considered by the colliery owners and coal traders to be unduly stringent. As a result of a conference of private owners, the association was formed to represent their interests.

Swedish State Absorption of Private Railways.—The Swedish State Railways are continuing to absorb the private railways, but more slowly than in recent months, owing to the increasingly tense international situation. It became known in Stockholm at the end of May that further lines are now proposed for nationalisation, namely, the Kalmar-Torsäs, and five small railways in the neighbourhood of Ystad. The Kalmar-Torsäs Railway owns 40 km. of 2 ft. 11 in. gauge line, worked with four locomotives, one railcar, 15 carriages, and 156 wagons. The Ystad group, of standard gauge, comprises the Malmö-Ystad (63 km.); Ystad-Eslöv (76 km.); Ystad-Gärsnäs-St. Olof (42 km.); Ystad-Brosarp (30 km.); and Börringe-Östratorp (22 km.). The total sum to be paid is Kr. 6,400,000.

Passenger's Slip on Ice on Footbridge.—Lord Robertson in the Outer House of the Court of Session dismissed on June 19 an action in which a passenger (Mr. G. R. Sherret) sought to recover damages from the L.N.E.R. Company for injuries caused by slipping on ice on an overhead footbridge at Inverkeithing station on November 7, 1940. Lord Robertson said that the case failed on relevancy, because there was no averment as to the length of time for which the ice existed, and no averment of any detailed fact (such as the thickness of the ice) from which it could be inferred that the ice had existed for any such length of time as to afford a reasonable opportunity for inspection and discovery, and so as to place the railway company under a duty to take precautions.

London Transport Extension of Time Application.—The London Passenger Transport Board is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, extending by three years the time now limited by sections of the London Passenger Transport Act, 1936, and the London Passenger Transport Act, 1938, for compulsory purchase of lands and for completion of works. A similar extension of time is also asked in respect of the provision of certain trolleybus routes authorised in 1936, and for the acquisition of additional lands in Stepney, authorised in 1935; and of additional lands at six places authorised in 1938, including those required for providing interchange facilities at East Finchley station.

Buenos Ayres & Pacific and Argentine Great Western Railways.—At meetings held on June 30 at Winchester House, E.C., holders of the 4½ per cent. consolidated debenture stock and the 5 per cent. (1912) debenture stock of the Buenos Ayres & Pacific Railway Co. Ltd., and holders of the 5 per cent. debenture stock and the 6 per cent. guaranteed preference stock of the Argentine Great Western Railway Co. Ltd., approved a scheme of arrangement providing for a year's continuance as from June 30, 1941, of the moratorium on the interest payable with power to the stockholders' committee to extend the moratorium until June 30, 1944.

Light Railway for Clonsast Bog.—An Order has been made by the Minister for Industry & Commerce in Eire empowering either the Turf Development Board or the Electricity Supply Board to construct a light railway connecting Clonsast bog with the Great Southern Railways main system. The extension of the existing narrow-gauge line to a point on the G.S.R. main line north of Portarlington will provide means for taking the harvest from the bog to all points served by the Great Southern system.

XUM

TRANSPORT SERVICES AND THE WAR—98

Women workers on L.M.S.R.—S.R. information posters—Tube shelter bedding storage—Great Southern (Eire) changes—Railway developments in Norway—Important Balkan railway changes

There are now more than 7,000 women workers on the L.M.S.R., nearly half of whom are acting as passenger and goods porters. More than 600 are attendants on parcel delivery vans; 246 are employed as labourers at engine sheds; 154 are messengers; and another 109 are engine cleaners. Others are working as stable hands, loaders, checkers, number takers, carters, callers-up, dining car attendants, and tube cleaners.

Southern Railway Travel Information Posts

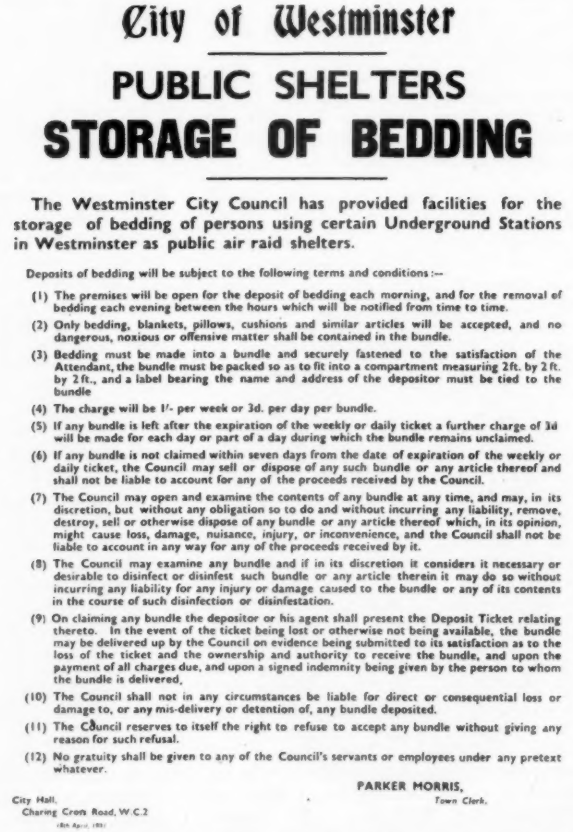
When air raids result in the modification or suspension of train services, passengers are naturally desirous of avoiding fruitless journeys to their station, when frequently alternative services are offered nearer to their homes. To facilitate this, the Southern Railway has now made arrangements for the latest travelling information to be available at a number of shops. If for any reason the train service has become interrupted, these travel information posts provide intending passengers with news of the alternative routes or emergency bus services. Special posters are also to be displayed at railway stations indicating that information with regard to train services can be seen at the specified addresses.

Organisation in the Ports

The Director-General of the Ministry of War Transport has made the following announcement: Arrangements have already been made at headquarters to unify efforts to secure the quickest turnround of ships, and the Minister of War Transport has now approved the following arrangements at the ports themselves. In those ports where a Regional Port Director is appointed, he is responsible for all the work arising out of the functions and duties of the Ministry relating to the operation of the ports within his region, and for these purposes is the Minister's chief executive officer. In matters relating to the loading and discharging of ships, he will have the assistance of the Shipping Representatives at the ports within the regions and, where a Regional Shipping Representative is appointed, the latter will act as Shipping Adviser to the Regional Port Director. The Regional Shipping Representatives, where appointed, and the Shipping Representatives will continue to deal, on behalf of the Minister, with such matters as the supervision of ships' managers and agents, and with questions (other than loading and discharging) which affect ships in port, *e.g.*, crew problems, progress of repairs, and arrangements with the Naval Authorities.

Municipal Cloakrooms for Tube Shelter Bedding

Through the co-operation of Mr. T. B. Copeman, Shelter Manager to the City of Westminster, we have now had an opportunity of viewing the accommodation provided by the Westminster City Council for storing the bedding of shelterers at tube stations. The scheme which was evolved by the Westminster City Council, in co-operation with the London Passenger Transport Board, was designed to assist shelterers, who had to comply with the general order to remove bedding from the tube shelters every morning. The



City of Westminster

PUBLIC SHELTERS

STORAGE OF BEDDING

The Westminster City Council has provided facilities for the storage of bedding of persons using certain Underground Stations in Westminster as public air raid shelters.

Deposits of bedding will be subject to the following terms and conditions:—

(1) The premises will be open for the deposit of bedding each morning, and for the removal of bedding each evening between the hours which will be notified from time to time.

(2) Only bedding, blankets, pillows, cushions and similar articles will be accepted, and no dangerous, noxious or offensive matter shall be contained in the bundle.

(3) Bedding must be made into a bundle and securely fastened to the satisfaction of the Attendant, the bundle must be packed so as to fit into a compartment measuring 2ft. by 2ft. by 2ft., and a label bearing the name and address of the depositor must be tied to the bundle

(4) The charge will be 1/- per week or 3d. per day per bundle.

(5) If any bundle is left after the expiration of the weekly or daily ticket a further charge of 3d will be made for each day or part of a day during which the bundle remains unclaimed.

(6) If any bundle is not claimed within seven days from the date of expiration of the weekly or daily ticket, the Council may sell or dispose of any such bundle or any article thereof and shall not be liable to account for any of the proceeds received by the Council.

(7) The Council may open and examine the contents of any bundle at any time, and may, in its discretion, but without any obligation so to do and without incurring any liability, remove, destroy, sell or otherwise dispose of any bundle or any article thereof which, in its opinion, might cause loss, damage, nuisance, injury, or inconvenience, and the Council shall not be liable to account in any way for any of the proceeds received by it.

(8) The Council may examine any bundle and if in its discretion it considers it necessary or desirable to disinfect or disinfest such bundle or any article therein it may do so without incurring any liability for any injury or damage caused to the bundle or any of its contents in the course of such disinfection or disinfestation.

(9) On claiming any bundle the depositor or his agent shall present the Deposit Ticket relating thereto. In the event of the ticket being lost or otherwise not being available, the bundle may be delivered up by the Council on evidence being submitted to its satisfaction as to the loss of the ticket and the ownership and authority to receive the bundle, and upon the payment of all charges due, and upon a signed indemnity being given by the person to whom the bundle is delivered.

(10) The Council shall not in any circumstances be liable for direct or consequential loss or damage to, or any mis-delivery or detention of, any bundle deposited.

(11) The Council reserves to itself the right to refuse to accept any bundle without giving any reason for such refusal.

(12) No gratuity shall be given to any of the Council's servants or employees under any pretext whatever.

PARKER MORRIS,
Town Clerk.

City Hall,
Charing Cross Road, W.C.2

Poster setting out the terms and conditions under which the Westminster City Council stores bedding of tube shelterers

Westminster authorities found that a large percentage of the members of the public who shelter in the tube stations within the City of Westminster boundary came from other boroughs and in consequence had to carry bedding for long distances or arrange for local storage. The latter was not considered satisfactory from the point of view of hygiene, and the Westminster City Council initiated the scheme whereby shelterers could leave their bedding in an official depository adjacent to the shelter upon payment of a weekly nominal charge. Leicester Square station was chosen for the experiment and here the Westminster City Council was able to obtain accommodation on railway premises. This was reconstructed and equipped on lines similar to the usual station cloakroom, and the depository was opened on April 16 last; the poster, which we reproduce, setting out the terms and conditions for deposits of bedding is dated April 18. As evidence of the popularity of the scheme, it may be recorded that shelterers are already using the depository to its capacity.

Applications for Exit Permits

The Home Office states that it has become necessary to distribute applications for exit permits on a geographical basis between the London office and provincial branches and that delays may arise if applications are sent to the wrong address. Exit permits are required by all persons who wish to travel to any country overseas, including Ireland. Applications from persons in Wales, and in Cheshire, Shropshire, Herefordshire, Monmouthshire, Northumberland, Cumberland, Durham, Westmorland, Yorkshire, and Lancashire, should be sent to the Branch Passport & Permit Office, 36, Dale Street, Liverpool, 2. Applications from persons in any other part of England should be sent to the Passport & Permit Office, Dartmouth Street, London, S.W.1. Applications from persons in Scotland should be sent to the Permit Office, 10, Bothwell Street, Glasgow, C.2.

Peterborough Railway Home Guard

Recently the Mayor of Peterborough (Councillor J. A. Bartram) presented a silver cup to " D " (Railway) Company, 1st (City of Peterborough) Battalion, Northamptonshire Home Guard, to be awarded annually to the most proficient platoon. " D " Company is recruited from both the L.N.E.R. and the L.M.S.R. and is commanded by Major E. A. J. Bilham, M.C., of the Engineer's Department, L.N.E.R. The competition for the cup was held on June 11, King's School playing field, and took the form of arms drill and platoon movements. The judges were Lt.-Colonel Herring Cooper, Sector Commander; Lt.-Colonel Burditt, M.C.T.D. Deputy Zone Commander, and Major Shillito, Zone Staff Officer. At the conclusion Lt.-Colonel Herring Cooper complimented the company on the keenness of the competition and the smartness of the display and announced that the judges had awarded the cup to No. 2 Platoon. The margin of marks between all three platoons was very close.

Great Southern Railways (Eire) Services

It was announced in Dublin on June 30 that the Great Southern Railways Company was considering the reduction of its services and that this position had arisen because of the considerable reduction in the available supply of coal. On June 19 it had been stated by a Government spokesman in the Dail that a position could be foreseen when passenger train services in the country might be run every second or third day only. The first step in the curtailment of services was taken by stopping all Sunday services from Dublin to the seaside, and it was stated on July 1 that timetables were being revised on the basis of a 25 per cent. cut in all services. The Great Northern Railway, on the other hand, which operates considerably in Eire, was reported to contemplate no immediate necessity for further curtailment of services, although a spokesman of the company admitted that in the matter of coal supplies the officials were " steering pretty close to the wind." He added that the company was not running anything approaching the usual summer services and in consequence of this it had been able to run its regular services.

On July 7 the Great Southern Railways advertised the suspension from July 13 of a number of main-line services and alterations in others. All main-line Sunday passenger trains were discontinued from July 13 and certain classes of excursion fares were suspended.

Coal Shortage in Argentina

Reference has already been made in THE RAILWAY GAZETTE on a number of occasions to the use of fuels alternative to coal on railways in Argentina. The use of maize as a railway fuel was dealt with at some length at page 18 of our July 4 issue. A Reuters message from Buenos Aires states that owing to the lack of coal the Central Argentine Railway is to use both wood and maize, and that the company, in announcing this, says that there can no longer be any guarantee that the trains will run on time or that the lighting and heating services will be up to normal.

Railway Developments in Norway

The 2-mile-long Sira tunnel on the Sörland line between Kristiansand and Flekkefjord, was pierced in March. Work on this line has been speeded up to bring about the connection of the coastal section with the main-line system. Goods transport by road on this section ceased from April 1, and all goods are being sent by coastal shipping lines until the completion of the railway.

A further section of the Nordland Railway was opened to all classes of traffic on March 15, namely, the 26 miles between Mosjøen and Elsfjord, with one intermediate station and four halts. As reported in THE RAILWAY GAZETTE of August 30, 1940, the railway was opened to Mosjøen last summer by the Germans. This was about a year in advance of the original Norwegian schedule, but the Norwegians had expressed the hope (only a few days before the German invasion) that the work might be completed by the autumn of 1940.

Conclusion of the Campaign in Syria

On July 9 it was announced by Mr. Churchill in the House of Commons that General Dentz had enquired of the British authorities the terms on which an armistice might be concluded. There was some delay, probably as a result of communication difficulties, but terms were agreed on July 14; the " cease fire " took place on July 11. British troops, including air borne units, occupied Mosul on June 4 and secured effective control of the standard-gauge railway running from Baghdad to the Syrian frontier at Tel Kotchek. Germany was reported, on June 5, to have taken over three important Syrian air ports and in the early hours of June 7 British and Free French forces began a four point advance into Syria. One of the earliest steps taken was the occupation on June 8 of the important railway centre of Deraa Junction, thus restoring the railway communications between Palestine and Transjordan. Damascus was occupied by Allied forces on June 21; Palmyra was reached by British Forces on June 23 and surrendered at 3.30 p.m. on July 3. On the same day Tel Kotchek on the Istanbul—Baghdad railway surrendered to the British.

R.A.F. Raids on Enemy-Occupied Territories

For over four weeks the R.A.F. has conducted an almost continuous series of intensive air raids over Germany and enemy-occupied territories; particular attention has been paid to the invasion ports, to Northern France, and to the north-western industrial area of Germany. In the 17 days to July 10 the R.A.F. had conducted no fewer than 128 raids and had penetrated over 300 miles of enemy territory to visit some 50 targets. In addition to bombing attacks which were carried out both by night and day, very extensive sweeps by fighter squadrons have been made, particularly over Northern France. Among the objectives which have been mentioned as having been bombed in these attacks are several important railway centres. It was announced on July 9 that on the previous night Hamm marshalling yards, which had not featured in the Air Ministry communiques since November 18, but which previously had suffered more attacks than any other single objective in Germany (it had been the subject of major attacks on 82 occasions), had again been visited. Osnabrück has also been visited, and damage has been reported to the railway yard, permanent way, locomotive sheds, and rolling stock. Rail-

way junctions at Frankfort and München-Gladbach have also been attacked. Düsseldorf and Munster are other railway centres which have received the attention of British bombers. A report from Lisbon stated that in Cologne, the centre for all traffic of south-west Germany, platforms 1 and 5 of the railway station had been destroyed and that the post office and luggage depot had been severely damaged. An earlier Lisbon message reported a Swiss engineer as saying that Hohenzollern Bridge at Cologne had collapsed as a result of bombing.

Balkan Railway Changes

The Bulgarian State Railways have taken over the Jugoslav and Greek railways in the territories allotted to Bulgaria by the Germans. They include the Jugoslav main line sections between Tsaribrod and Nish on the Sofia—Belgrade trunk line, and between Nish and Ghevgheli on the Salonika line; as well as the Svilengrad—Pithion—Alexandroupolis—Xanthi—Demirhissar (Siderocastro) section of the Greek Thrace and Macedonia main line, together with branch lines. It seems doubtful whether Bulgarian ownership has been extended to Nish, but probably the Bulgarian administration is working to that point. The Jugoslav sections of which ownership seems to have been transferred are: Tsaribrod—Pirot; Vranje—Skoplje—Ghevgheli; Veles—Kremenica; and Veles—Kocane.

Work on four new railways from existing Bulgarian termini on the frontier was begun in June. The new lines are:—

1.—A standard-gauge line from Gueschevo to Kumanovo (on the Nish—Skoplje section, due west of Gueschevo), providing a direct route between Sofia and Skoplje.

2.—A standard-gauge line from Gorna Djumaia (the present break-of-gauge station on the Struma valley line) to Kocane, the terminus of a branch line from Veles on the Belgrade—Salonika line.

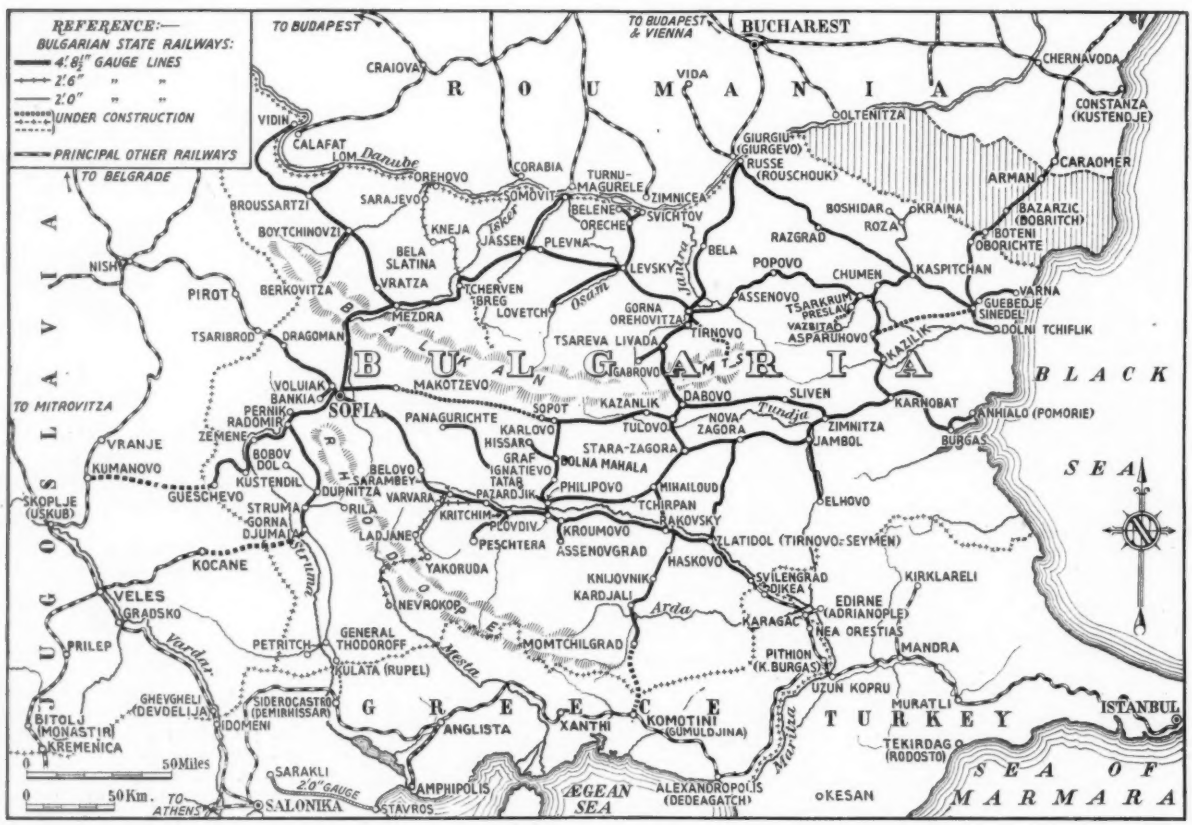
3.—A narrow-gauge (75 mm.) line from Kulata (the terminus of the Struma valley line) to Demirhissar on the part of the Greek main line from Salonika to the Turkish and Bulgarian frontiers now taken over by Bulgaria. This line is being built with the object of subsequent conversion to standard gauge, together with the remaining sections of the Struma valley line, on which work of gauge conversion is proceeding in the meantime.

4.—A standard-gauge line from Momtchilgrad, now a terminus of a branch from Rakovsky on the Sofia—Istanbul main line, to Komotini on the Greek Macedonia and Thrace main line, providing a new route between Bulgaria and the Ægean Sea ports.

The Bulgarian-Roumanian train ferry service between Russe (Rouschouk) and Giurgiu (Giurgevo) was opened on June 16, work on the Roumanian landing stage having been speeded up sufficiently to advance the date of the opening.

Although organised Jugoslav resistance ceased some time ago, it appears that Serbian patriots are still carrying on guerilla warfare against lines of communication. For example, they are stated to have effected severe damage to the railway from Nish to the Greek border on or about June 30.

On June 18 Turkey signed a treaty of friendship with Germany, without prejudice to existing treaty obligations with Great Britain. Supplementary agreements were signed at Ankara on June 19 concerning railway communications in the Balkans. It is said that Turkey agreed to administer temporarily the railway in the section of Greek territory between Bulgaria and Turkey (Svilengrad—Pithion); and also to repair the Greek section of the railway between Sinekli and Ipsala (on the Pithion—Dedeagatch section) in Thrace. For the latter object Turkey is to purchase from Germany the necessary materials for the repair of damaged bridges. Turkey has undertaken to effect the repair with that material at the earliest possible date.



The railways of Bulgaria and neighbouring countries, including lines under construction and proposed. The Southern Dobrudja area ceded by Roumania to Bulgaria in August, 1940, is indicated by vertical lining

RAILWAY AND OTHER MEETINGS

Bombay, Baroda & Central India Railway Company

The annual meeting of the Bombay, Baroda & Central India Railway Company was held at "Guildcroft," Epsom Road, Guildford, Surrey, on July 14. Major P. D. G. Shelley, R.E., Chairman of the company, presided.

The Secretary, Mr. N. Lincoln, having read the notice convening the meeting,

The Chairman said that details of the results of the working of the undertaking for the year 1940-41,owing to postal delays, had not reached the board in time for submission, but the cabled summary of results showed a satisfactory position, gross earnings having amounted to 14 crores, 8 lakhs, and 73 thousand rupees, compared with about 12¼ crores for the previous year, working expenses to 6 crores, 58 lakhs, and 75 thousand rupees, and net earnings to 7 crores, 49 lakhs, and 98 thousand rupees, as compared with 5 crores, 91 lakhs, and 45 thousand rupees for the previous year. The ratio of working expenses to gross earnings was 46·8 per cent., a very low figure.

The large increase in gross earnings was due to the stimulus given to business by the war, to troop movements, to the carriage by rail of coal which formerly went by sea, and to the increased rates and fares which had been in force only for one month of the previous financial year. Excess Profits Taxes would deprive the company of all profits above those of the standard year. Gross earnings up to date showed an increase of over 3 per cent. as compared with the corresponding period of 1940-41. One could not contemplate without regret the final winding-up of a company which has rendered valuable public service for over eighty years. He would like to quote some remarks made by his predecessor, Sir William Bisset, when the company was reorganised in 1906. He said :—

"I am unwilling to let this chapter of the company's history be closed without a word of grateful remembrance of the services rendered to the company and to India by the distinguished founders of the company, who are entitled to a high place among the pioneers of railway construction in India. Foremost among these must be mentioned Colonel Patrick French, once Resident at Baroda, and so long the Chairman of the company. It was through the courageous initiative of Colonel French and on the wise advice of Colonel Pitt Kennedy, an officer whose influence on Indian railway policy was acknowledged by Lord Dalhousie, that steps were taken in the City of London to form this company more than fifty years ago; and it was by this company's enterprise, supported by the system of Government guarantee which Lord Dalhousie so wisely recognised as necessary, it was by the use of your money, gentlemen, and by the ability of your engineers, that the great foundation was laid of the Bombay, Baroda & Central India Railway, which has, in the course of its fifty years' existence, contributed so largely to the development of the cotton industries and shipping trade of Bombay, and added so largely to the wealth of the agricultural community and to the rent roll of the Government as well as to that of the Gaekwar of Baroda and the many native States in Gujarat."

This was the first opportunity which he had had of addressing the stockholders since notice of termination of the contracts had been received, and he could not allow the occasion to pass without a repetition of his predecessor's tribute to the founders, and at the same time a word of recognition of the valued services rendered by generations of railway officials and staff throughout the life of the company. He had known the staff of the B.B. & C.I. Railway for thirty-five years, and could vouch for the tradition of loyalty, and devotion to duty, which had always characterised the service. Stockholders would be asked to pass a resolution acknowledging the services rendered by the Agent and General Manager, and those who worked under him. The exigencies of war-time had placed a greater strain than ever on the staff. Proof of the patriotic spirit which animated the employees in India was to be found in the fact that last year, on their own initiative and without any official pressure, they inaugurated a Spitfire Fund for the purchase of war planes for the British Government. We understood that the B.B. & C.I. Railway was the first railway in the Empire to start such a fund. Its employees had collected, and remitted home, £15,000, sufficient for the purchase of three fighter planes. It was with great regret that the board had had to give its employees notice of termination of their service with the company at the end of the year. Most of them would no doubt retain their posts on the railway as Government servants.

As the company was incorporated by a special Act of Parliament, another Act would be necessary for the final winding-up. A Bill was being drafted for this purpose, and would in due course be submitted for approval.

Among the resolutions being submitted was one concerning the London Staff Gratuity Fund. If the final contribution to the fund, namely, that for the current financial year, were limited to the usual £4,000, the board estimated that the total available might fall slightly short of the sum required to give adequate gratuities to the London Staff. It was accordingly asking for authority to allot from stockholders' funds in respect of the current year such sum, not exceeding £6,000, as may be found necessary, in place of the usual £4,000.

Two years ago stockholders had authorised the board to pay out of stockholders' funds an entertainment allowance not exceeding £500 a year to the Agent and General Manager in Bombay. The present incumbent of the post, Mr. Laughton, who had been a State railway officer on loan to the company up till last month, had now retired from Government service and had become a company's employee. After a good deal of correspondence with Government, a compromise had been arrived at which provided that he should draw from the revenues of the undertaking the pay of the Agent and General Manager's post reduced by the amount of his pension, plus a personal allowance of Rs. 500 per mensem. His total emoluments would then fall somewhat short of full pay and pension, and the board proposed to make up the difference out of the company's funds in the form of entertainment allowance. The sum involved would be considerably less than the £500 a year which Mr. Laughton had drawn hitherto.

The report and accounts were adopted.

Railway and Other Reports

Zafra & Huelva Railway Company.—The London committee announces that, in consequence of a loss of 475,267 pesetas on working of the railway for 1940, no distribution can be made to holders of the 3 per cent. first mortgage bonds in respect of coupons Nos. 110 and 111, nor can any bonds be purchased for cancellation. The last distribution was 1s. 3d. in April, 1931, against coupons due July 1, 1930, and January 1, 1931. The report and accounts this year are circulated in Spanish.

North British Locomotive Co. Ltd.—Profit for the year 1940, after providing for depreciation, amounted to £222,660; £150,000 is reserved for taxation. With £95,602 brought forward, the total amount available is £168,262. Profit for 1939 was £144,298. The dividend on the preference stock for the four years to June 30, 1937 (£75,000) is being met out of the 1940 earnings, leaving £95,602 to be carried forward.

Guest, Keen & Nettlefolds Limited.—Profits for the year to March 31 last were £868,000 (£1,003,000) after charging debenture interest, depreciation, and taxation. Out of these profits the directors transfer £200,000 (£250,000) to war damage insurance, general reserve, and contingencies account. To meet the fall in value of quoted securities, £500,000 has been transferred from reserve fund to investments reserve. Final ordinary dividend is 2½ per cent., tax free, making 5 per cent., tax free, against 6½ per cent., tax free, for 1939-40.

Forthcoming Meetings

July 30 (*Wed.*)—**Shropshire & Montgomeryshire Light Railway Company** (Ordinary general), Charing Cross Hotel, London, W.C., at 12.15 p.m.

July 30 (*Wed.*)—**Snailbeach District Railway Company's** (Ordinary general), Charing Cross Hotel, London, W.C., at 12.45 p.m.

Parliamentary Notes

Progress of Railway Bills

The Lords amendments to the Railway Clearing System Superannuation Fund Corporation Bill were considered in the House of Commons on July 1 and were agreed to.

The London Midland & Scottish Railway Bill was read a third time, with the amendments, and passed in the House of Lords on July 2.

The Railway Clearing System Superannuation Fund Bill received the Royal Assent in the House of Lords on July 2.

Questions in Parliament

Road Traffic Lights

Mr. C. G. Ammon (North Camberwell—Lab.), on July 1, asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware of the difficulty, particularly in sunny weather, in seeing the traffic regulation lights; and whether he would consider that the light be a half-disc as was the case in the provinces and districts near to the London area.

Colonel J. J. Llewellin replied that the exposure of a larger disc of light during daylight hours than could be allowed at night involved the adjustment of a mask on each light. It had not so far been found possible to instal generally an automatic device for that purpose, and it would readily be appreciated that manual adjustment night and morning of the many lights in London was not practicable.

Accidents to Nigerian Railway Workers

Mr. W. Dobbie (Rotherham—Lab.), on July 2, asked the Under Secretary of State for the Colonies the number of railway employees injured and killed on the railways in Nigeria whilst at duty in the years 1938, 1939, and 1940; in how many instances compensation had been paid for accidents and deaths due to accidents in those years on the same railways; and the individual amount for each case.

Mr. George Hall said that the information desired by Mr. Dobbie was not yet all available at the Colonial Office. The Governor was being asked to supply it, and he would communicate with Mr. Dobbie as soon as a reply had been received.

Canals and Inland Waterways

Mr. W. Thorne (Plaistow—Lab.), on July 2, asked the Parliamentary Secretary to the Ministry of War Transport when Mr. Frank Pick would report in connection with the investigation into traffic on British canals and inland waterways.

Colonel J. J. Llewellin said that Mr. Frank Pick's report had been received.

Mr. G. Mathers (Linlithgow—Lab.), on July 2, asked the Parliamentary Secretary to the Ministry of War Transport whether, arising out of the experience of the war he would consult with all the other Ministers concerned and consider making preparations for the enlarging of the Forth & Clyde canal or the construction of a new mid-Scotland canal for ocean-going ships.

Colonel Llewellin said the report of the Mid-Scotland Ship Canal Committee issued in 1930 indicated that the cost of a canal would probably be £50,000,000 or more; that the necessary preliminary preparations would occupy from three to four and a half years; and that the construction would take from 10 to 16 years. The project was again examined in 1937, and it was decided that the advantages were insufficient to justify its construction. Nothing had happened since to warrant a reversal of that decision.

Metal Road Studs

Mr. J. J. Tinker (Leigh—Lab.), on July 2, asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that the use of metal studs with reflecting lenses was very much approved of by motor drivers; and could he state how many highway authorities were putting them in use.

Colonel J. J. Llewellin said he was aware of the advantages of reflecting studs, but without widespread inquiry, which he was afraid would not be justified, he was unable to state the number of highway authorities using such studs.

Asked by Mr. Tinker to urge local highway authorities who had not done so to put them in, Colonel Llewellin said he would consider whether his Ministry could circulate more.

Refreshments for Armed Forces

Captain A. S. Cunningham-Reid (St. Marylebone—C.), on July 2, asked the Parliamentary Secretary to the Ministry of War Transport whether, in order to supply the needs of the thousands of troops travelling at the present time, there were now provided on all long distance trains alternative refreshments to the standard 2s. 9d. lunch, which was beyond the means of the average member of the Forces.

Colonel J. J. Llewellin said that Army and Air Force personnel travelling on duty or going on leave carried their own rations for the journey. On certain long-distance trains there were buffet cars in which refreshments were provided by voluntary organisations and N.A.A.F.I. at low prices exclusively for members of the Services. Voluntary organisations also ran canteens for the Services at some 130 main-line stations. Railway refreshment buffets and platform trolleys were also available.

Captain Cunningham-Reid asked the Parliamentary Secretary if he appreciated that many of these trains were so long that men in the Services who were either at the rear or in the front often did not have sufficient time at stations to get to the canteens, nor was it possible at times for them to get along the corridors, for those were often congested with soldiers who were unable to obtain seats.

Colonel Llewellin said he thought any soldier who really wanted a meal could get from one end of the train to the other.

Mr. J. J. Lawson (Chester-le-Street—Lab.): Is the Parliamentary Secretary aware that civilians travelling on trains envy the soldiers the facilities provided for them?

Colonel Llewellin: I can believe that.

British and Irish Railway Stocks and Shares

Stocks	Highest 1940	Lowest 1940	Prices July 11, 1941	Rise/Fall
G.W.R.				
Cons. Ord.	52	22½	36½	+ ½
5% Con. Pref. ...	103½	58	100½	— ½
5% Red. Pref. (1950)	105½	88	104	+ 1
4% Deb.	107½	90½	108½	+ ½
4½% Deb.	108½	96½	111	— 2
4½% Deb.	114½	96	115½	— 1
5% Deb.	124	106	129	— 1
2½% Deb.	66½	57	66	—
5% Rt. Charge ...	117½	97	125½	— 2
5% Co s.Guar. ...	117	90½	124½	+ ½
M.S.R.				
Ord	24⅞	9	14½	+ 1
4% Pref (1923) ...	60½	21⅛	42½	+ 1½
4% Pref	70½	35	59	+ ½
5% Red. Pref. (1955)	94½	60	84½	—
4% Deb.	101½	81	101½	—
5% Red. Deb. (1952)	109½	102	108	—
4% Guar.	93½	65	94	+ ½
L.N.E.R.				
5% Pref. Ord. ...	8⅛	1½	2⅜	+ ⅛
Def. Ord.	4⅛	1½	1⅜	—
4% First Pref. ...	60	20	42½	+ 1½
4% Second Pref. ...	22⅞	6½	16	+ ⅜
5% Red. Pref. (1955)	80	34½	66½	+ 4
4% First Guar. ...	86½	56	85½	+ ½
4% Second Guar. ...	77½	37	74½	+ 4
3% Deb.	73½	54½	75½	—
4% Deb.	97⅜	74	100½	—
5% Red. Deb. (1947)	107	96½	104	—
4½% Sinking Fund Red. Deb.	104	98	101½	— 1
SOUTHERN				
Pref. Ord.	79	34	54½	+ 1
Def. Ord.	22½	7	12½	+ ⅜
5% Pref.	104½	58¼	98½	+ 2½
5% Red. Pref. (1964)	105	85	104½	+ 4
5% Guar. Pref. ...	116½	90	124½	+ ½
5% Red. Guar. Pref. (1957)	114 5/16	94	113½	—
4% Deb.	106½	84¼	105½	— ½
5% Deb.	122½	100	126½	— 2
4% Red. Deb. (1962–67)	106	96½	105	— 1
4% Red. Deb. (1970–80)	106⅜	93	105	— 1
FORTH BRIDGE				
4% Deb.	95½	87	92½	—
4% Guar.	93½	81¼	92½	—
L.P.T.B.				
4½% "A"	116	103	114½	+ ½
5% "A"	121½	107	123½	+ ½
4½% "T.F.A." ...	105½	101	101½	—
5% "B"	116	102	109½	+ ½
"C"	65½	24	37	—
MERSEY				
Ord.	26	18½	20½	—
4% Perp. Deb. ...	92½	86½	92½	—
3% Perp. Deb. ...	68	63	67½	—
3% Perp. Pref. ...	57	50½	53⅜	—
IRELAND				
BELFAST & C.D.				
Ord.	4	3	4	—
G. NORTHERN				
Ord.	4½	1½	6½	—
G. SOUTHERN				
Ord.	12½	4	8⅜	—
Pref.	15½	6	9	— ⅛
Guar.	36	15	24	— 1½
Deb.	55½	40	50	— 1½

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MINISTRY OF WAR TRANSPORT ACCIDENT REPORT

Near Westborough Signal Box, L.N.E.R., April 28, 1941

Fire broke out in the second last vehicle of the 11-coach 12.45 p.m. express, King's Cross to Newcastle, when it was running at about 55 m.p.h. near Hougham, about 8 miles north of Grantham. So rapidly did the fire gain that the coach was blazing fiercely by the time the train stopped. The last three vehicles were uncoupled from the train, which was drawn away, but the fire spread and all three were burnt down to the underframes. The weather was fine, with a fresh east wind. Colonel A. C. Trench conducted the inquiry.

The eighth vehicle in the train, the last in the ordinary portion, was a corridor brake composite in which the guard was riding. The next two were open-vestibule bucket-seat thirds, Nos. 24083 and 22508, built in 1934, and were occupied by about 100 boys returning to Ampleforth College, of whom six lost their lives and seven were injured. The last vehicle was brake van No. 4176, and the three would have been detached at York to be worked over a branch line to Gilling. All had timber bodies on steel underframes, the company's standard type of construction. The open thirds had vestibules at each end, reached through hinged doors opening outwards from the main body. In the vestibules there were the usual platform doors on each side, with drop lights, and the door of the gangway connection. The gangway doors leading to the vans at each end of these two coaches were locked in accordance with regulations, but communication between them was free.

The bucket-seats were substantially similar to those common on modern road coaches and had wooden framing mounted on metal pedestals. The backs and undersides of the seats were of plywood with a thin layer of wadding and covered with Rexine. Rexine-covered plywood was used for the interior panelling of the coaches.

The guard had walked through the coaches to see that the lights were switched on for Stoke tunnel, just before Grantham, and locked the door to his brake on returning to it. In evidence it transpired that some boys were flicking lighted matches about, one of which fell between the seat and the side of the coach, and this started a small fire in an inaccessible position. Colonel Trench considers that the match may have fallen on paper which had lodged at the side of the seat. Fanned by the draught from the open sliding ventilators, above the windows, the fire spread rapidly, with dense smoke, and, although the boys tried to beat it out and threw water from a lavatory upon it, they could not cope with it. The master in charge was then fetched from the leading of the two coaches, and the communication cord was pulled; prevented from obtaining an extinguisher from the guard's van ahead because the door was locked, the master pulled the communication cord in the leading coach. Some of the boys moved into this coach and others went to the trailing vestibule of the burning vehicle. A number jumped out before the train stopped, but escaped almost uninjured.

When the guard felt the brake application he looked back and saw flames and smoke coming from the burning coach. As soon as the train came to a stand he went back and got into it to ascertain whether any boys remained. Owing to the rapidly spreading fire, he could do no more than uncouple the last three vehicles, and the main train was then drawn ahead unharmed. In connection with the inquiry, Colonel Trench carried out a number of trials of various methods of ignition, aided by the draught of fans, and satisfied himself that, under normal conditions, the fire risk with this particular type of seating was not greater than with ordinary seats, though he recommended that, the space between the seat backs not being readily accessible, it would be better to have a plain plywood finish rather than a covering of wadding and Rexine. Apart from this recommendation, Colonel Trench discussed the locking of gangway doors in corridor trains and suggested that the companies should consider an amendment to the existing regulations about locking corridor doors between passenger accommodation of different classes. He did not think, however, that in this particular case the locking of the gangway doors leading to the two brake vans had any material bearing on the accident. By the time the master in charge could have got the extinguisher from the van the fire had already grown beyond control.

In connection with the stopping of the train as a result of the pulling of the communication cord, the master in charge thought that the stop was not as prompt as it should have been, but Colonel Trench thinks that this opinion was probably due to a natural anxiety and also to the fact that the reduction from 55 m.p.h. to, say, 40 m.p.h. may take as long as the remainder of the time from 40 m.p.h. to stop. The statement by one of the boys, who had been timing the train from the mileposts, that the cord was pulled just after milepost 112, indicated that the stop covered 1¼ mile and took about three minutes, which was not unreasonable down the slightly falling grade. The driver, in evidence, stated that he was considering running on to the signal box for the sake of the proximity of a telephone but, in fact, stopped as promptly as possible. In this connection Colonel Trench emphasises that such action would not have been a justifiable exercise of the driver's discretion. The driver should take immediate action to stop as quickly as is prudent when a brake application indicates that a communication cord has been pulled, but should, of course, avoid stopping on a viaduct, in a tunnel or in other awkward positions.

Contracts & Tenders

Mr. J. J. Pelley, President of the Association of American Railroads, states that more new freight wagons are on order than at any time in the past 16 years. On May 1, 1941, Class I railways had 56,502 freight wagons on order. Since then, preliminary reports received by the association indicate that orders are soon to be placed for 16,225 more. All are expected to be completed and brought into service this year. Taking into consideration the 24,284 freight wagons which were brought into service during the first four months, this means that about 97,000 wagons will have been completed and put in service during 1941. In addition, under the programme approved by the member roads of the association in Chicago on May 12, the railways will provide for a net increase of 120,000 wagons for the expected rise in traffic in 1942. The total number of freight wagons on order on May 1, 1941, was an increase of 14,167 on the number on order on April 1, 1941, and an increase of 39,042 on May 1, 1940. Freight cars, for which orders had been placed on May 1, 1941, included 33,001 box, 20,817 coal, 1,298 refrigerator, 985 flat, and 401 miscellaneous wagons.

XUM

Railway Stock Market

Most sections of the Stock Exchange have experienced their most buoyant and active period since the war began, in response to the continued strength of British Funds and the hopeful developments in the war and international affairs. The rise in values was again out of proportion to the amount of business actually transacted, although the latter showed a broadening of interest in the equity or ordinary securities of industrial and other companies. Technical market conditions, arising from the small volume of selling and shortage of stock, were again an important factor in governing the general trend. Nevertheless, although it is realised that, should unfavourable war news in the future lead to only a moderate increase in selling, market values would probably show a sharp downward adjustment, the prevailing view is that current levels are justified. In fact, the disposition is to argue that the average yield on leading industrial securities, which is approximately 6 per cent., or roughly twice that on gilt-edged stocks, shows an unduly wide margin over the latter. It is, of course, prudent to assume that there will be some reduction in the general level of dividend payments of industrial companies, and buying will probably be more selective in future than has been the case recently. Nevertheless, investment demand will continue to centre on gilt-edged, and over a period, the invariable tendency is for the yields obtainable on the latter to be the main influence on other classes of securities.

As was to be expected, best prices recorded in the past few days were not fully held, but home railway stocks have moved higher in accordance with the surrounding market trend and hopeful views as to next week's dividend statements. Nevertheless, yields on the prior charges and junior issues are still generous compared with the return on equivalent stocks in other sections of the market. It is true that uncertainty surrounds prospects until there is a definite decision in regard to revision of the financial agreement, but on the other hand, the prior charges are in any case classed as assured of good cover for their interest requirements. Furthermore, if the junior stocks received dividends only equal to those that could be paid on the guaranteed minimum revenue basis, yields would still be substantial. At the time of writing reports are current that revision of the financial agreement will provide for stabilisation of transport charges to the public and that the factor of rising costs of operation will be met by Exchequer grants or subsidies.

Improved demand has been experienced for L.M.S.R. ordinary stock, which on balance moved higher from 13⅜ to 14⅜. The senior and 1923 preference stocks of the L.M.S.R. at 59½ and 42½ respectively were each a point better, as was the guaranteed stock at 95. Moreover, this railway's 4 per cent. debentures were 102½, compared with 101½ a week ago. Minor fluctuations were shown in Great Western ordinary, which at 36¾ was, however, slightly higher on balance; the debentures remained at 108; but the preference stock was fractionally better at 101½. At 16¼, L.N.E.R. second preference recorded a sharp rise; the first preference was 42½; and at 86½ and 75 respectively, the first and second guaranteed were above the prices current a week ago. Moreover, L.N.E.R. 4 per cent. debentures improved to 101, and at 76½ the 3 per cent. debentures were also a point better. Among Southern issues, the preferred at 54½, and the deferred at 12⅜, recorded fractional gains, but the preference stock moved up from 96½ to 98; the 4 per cent. debentures remained at 105½. London Transport "C" held the recent improvement to 37.

Argentine railway issues were again better on balance. B.A. Great Southern 4 per cent. debentures were 43, a gain of three points, and at 34½, B.A. & Pacific 4½ per cent. debentures were two points higher. Elsewhere, Antofagasta preference and Leopoldina debentures improved. San Paulo ordinary rose four points to 29. French railway sterling bonds were marked higher.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1940-41	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1940	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1940	Prices: Lowest 1940	Prices: July 11, 1941	Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	6.7.41	£ 13,980	+ £ 1,680	27	£ 482,520	£ 500,740	— £ 18,220	Ord. Stk.	11½	3½	5½	Nil
	Argentine North Eastern	753	5.7.41	ps. 191,300	—	1	ps. 135,200	ps. 158,100	— ps.22,900	,,	3¾	1	2	Nil
	Bolivar	174	June, 1941	3,940	+ 10	26	23,072	24,580	— 1,508	6 p.c. Deb. Bonds	8	5	5	Nil
	Brazil	—	—	—	—	—	—	—	—	—	—	—	—	—
	Buenos Ayres & Pacific	2,801	28.6.41	ps.1,585,000	+ps.461,000	52	ps.75,233,000	ps. 71,223,000	+ ps.4,010,000	Ord. Stk.	4½	1	2½	Nil
	Buenos Aires Central	190	18.1.41	$70,400	— $20,200	29	$2,477,400	$2,994,900	— $517,500	—	—	—	—	—
	Buenos Ayres Great Southern	5,082	28.6.41	ps.2,559,000	+ps.775,000	52	ps.115,881,000	ps.119.875,000	— ps.3,994,000	Ord. Stk.	10⅜	3	5½	Nil
	Buenos Ayres Western	1,930	28.6.41	ps.1,030,000	+ps.253,000	52	ps.41,538,000	ps. 40,684,000	+ ps. 854,000	,,	8⅜	2	4	Nil
	Central Argentine	3,700	5.7.41	ps. 1,832,000	+ps.343,500	1	ps. 1,293,850	ps. 1,248,050	+ ps. 45,800	,,	8½	2	4	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4	½	1½	Nil
	Cent. Uruguay of M. Video	972	28.6.41	28,724	+ 10,321	52	1,237,432	1,138,621	+ 98,811	Ord. Stk.	3¾	½	2	Nil
	Costa Rica	188	April 1941	15,450	— 2,390	43	152,170	176,057	— 23,887	Stk.	23⅛	14	15½	12⅞
	Dorada	70	June, 1941	13,200	+ 300	26	75,300	72,000	+ 3,300	1 Mt. Db	99	97½	97	6⅛
	Entre Rios	808	5.7.41	ps. 293,200	+ ps.22,900	1	ps. 200,500	ps. 224,500	— ps. 24,000	Ord. Stk.	4	½	1½	Nil
	Great Western of Brazil	1,016	5.7.41	7,200	— 1,800	27	250,900	288,700	— 37,800	Ord. Sh.	4/-	1/-	7/16	Nil
	International of Cl. Amer.	794	Apl. 1941	$523,559	— $57,739	17	$1,967,942	$2,343,432	— $375,490	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	9d.	9d.	½	Nil
	La Guaira & Caracas	22¾	June,1941	5,075	+ 315	26	35,220	39,435	— 4,215	—	6	4	—	—
	Leopoldina	1,918	28.6.41	26,576	+ 4,413	26	616,320	558,089	+ 58,231	Ord. Stk.	2 7/16	¼	1	Nil
	Mexican	483	30.6.41	ps. 451,500	+ps. 22,500	26	ps. 8,099,000	ps. 7,925,000	+ ps 174,000	,,	2 11/14	7/16	⅛	Nil
	Midland of Uruguay	319	May, 1941	15,465	+ 1,693	48	135,666	121,022	+ 14,644	—	—	—	—	—
	Nitrate	386	30.6.41	6,702	— 845	26	53,710	88,362	— 34,652	Ord. Sh.	2¾	1½	2½	5⅜
	Paraguay Central	274	5.7.41	$3,691,000	+ $40,000	1	$3,025,000	$2,967,000	+ $58,000	Pr. Li. Stk.	41	36	28½	21 7/16
	Peruvian Corporation	1,059	June, 1941	63,288	— 7,119	52	772,792	820,597	— 47,805	Pref.	4	1	2	Nil
	Salvador	100	3.5.41	c10,487	— c6,186	44	c694,255	c893,878	— c199,623	—	—	—	—	—
	San Paulo	153½	29.6.41	38,750	— 997	26	962,551	946,658	+ 15,893	Ord. Stk.	50	23	28½	7
	Taltal	160	June, 1941	2,050	+ 1,220	52	32,595	29,590	+ 3,005	Ord. Sh.	15/1½	⅜	⅜	Nil
	United of Havana	1,346	5.7.41	19,969	+ 1,511	1	14,662	15,713	— 1,051	Ord. Stk.	⅜	¼	¼	Nil
	Uruguay Northern	73	May, 1941	1,442	+ 329	48	12,771	12,356	+ 415	—	—	—	—	—
Canada	Canadian National	23,579	30.6.41	1,568,622	+ 258,594	26	28,343,097	22,736,310	+ 5,606,787	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	86	68	91½	4⅜
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gr.	105¾	95 1/2	101½	3 15/16
	Canadian Pacific	17,153	30.6.41	1,182,000	+ 236,200	26	19,968,400	15,077,000	+ 4,891,400	Ord. Stk.	9 7/16	4⅞	9	Nil
India†	Assam Bengal	1,329	—	—	—	—	—	—	—	Ord. Stk.	99⅜	71	100	3
	Barsi Light	202	30.4.41	5,557	+ 2,107	4	19,687	13,920	+ 5,767	—	—	—	—	—
	Bengal & North Western	2,086	31.5.41	270,525	— 37,232	9	544,425	595,649	— 51,224	Ord. Stk.	283	234	300	5 7/16
	Bengal Dooars & Extension	161	Sept. 1940	14,625	+ 508	46	78,405	66,243	+ 12,162	,,	—	—	—	—
	Bengal-Nagpur	3,269	31.3.41	266,175	+ 11,055	52	8,989,306	8,266,447	+ 722,859	,,	96	83⅞	100½	4
	Bombay, Baroda & Cl. India	2,986	30.6.41	300,750	+ 50,700	13	2,832,750	2,686,350	+ 146,400	,,	108	99	108½	5½
	Madras & Southern Mahratta	2,939	30.4.41	196,125	— 4,637	4	586,500	575,869	+ 10,631	,,	104	97⅞	102½	7 7/16
	Rohilkund & Kumaon	571	31.5.41	66,150	— 3,960	9	128,925	139,568	— 10,648	,,	284	238	291	5½
	South Indian	2,500	20.4.41	127,626	+ 2,675	3	269,156	242,933	+ 26,223	,,	93¾	83	97½	4½
Various	Beira	204	April 1941	65,450	—	31	495,141	—	—	—	—	—	—	—
	Egyptian Delta	610	20.5.41	6,428	+ 1,837	6	25,728	19,436	+ 6,292	Prf. Sh.	7/10½	⅜	¼	Nil
	Kenya & Uganda	1,625	—	—	—	—	—	—	—	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	44½	49	6½
	Midland of W. Australia	277	Feb. 1941	13,851	+ 1,637	35	119,604	102,871	+ 16,733	Inc. Deb.	88	80	87½	6⅞
	Nigerian	1,900	31.3.41	100,291	+ 53,330	52	2,494,207	2,108,686	+ 385,521	—	—	—	—	—
	Rhodesia	2,442	April 1941	429,209	—	31	3,283,108	—	—	—	—	—	—	—
	South Africa	13,287	24.5.41	710,175	+ 119,147	8	5,616,870	5,011,903	+ 604,967	—	—	—	—	—
	Victoria	4,774	Mar. 1941	973,121	+ 89,092	39	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛ Argentine traffics are given in pesos
† Receipts are calculated @ 1s. 6d. to the rupee